

## **VI. WRNF AIR RESOURCE MONITORING STRATEGY**

### **A. VISIBILITY MONITORING (AQRV: VISIBILITY)**

1. Continue long term IMPROVE monitoring effort at the WHRI site. Funding of the data analysis of this site is provided at the Washington Office level

ANNUAL COST:

\$35,000 – IMPROVE filter analyses (funded out of W.O.)

\$4,000 – operation and maintenance of IMPROVE (funded by WRNF)

2. Assume maintenance and operation responsibility of IMPROVE monitor at Ripple Creek Site. Strive to continue monitoring at this site for long term.

ANNUAL COST:

\$35,000 – IMPROVE filter analyses (funded by WRNF and partners)

\$50,000-65,000 – operation and maintenance of IMPROVE (funded by WRNF and partners)

### **B. WILDERNESS LAKE MONITORING (AQRV – WATER)**

1. Continue long term wilderness lake monitoring of ten established lake sites on the WRNF.

ANNUAL COST:

\$3,500 - Lab analyses of lake water samples

\$6,000 – Acquisition of lake samples (3 site visits per lake)

2. Analyze wilderness lake data using appropriate statistics. Compare data to appropriate causal factors (i.e. climate, basin hydrography, etc.). Cooperate with other agencies and organizations as needed to understand analyses results. Prepare a report on findings.

ANNUAL COST:

This will take at least 2 years to complete. Estimated time and cost (GS-11) is 10 days per year at \$4,000 per year.

3. Analyze wilderness lake samples for trace metals

ANNUAL COST:

\$570 – one sample per lake (mid-summer sample)

4. Expand lake water monitoring as necessary to understand causal factors leading to current trends in chemical concentrations.

### **C. SNOWPACK CHEMISTRY MONITORING (AQRV – WATER)**

1. Continue coordination with USGS for the life of the project.

ANNUAL COST:

\$35,000 – project money covered by the Region 2

### **D. NADP MONITORING (AQRV – WATER)**

1. Continue coordination with EPA and NADP for the life of the project for both NADP sites (Four-Mile and Sunlight)

ANNUAL COST:

\$15,000 – covers salary, equipment, shipping and miscellaneous for the operation and maintenance of the two NADP sites  
Cost of precipitation analysis is covered by the EPA

### **E. OZONE MONITORING (AQRV – FLORA)**

1. Establish long term ozone monitoring at one to three representative sites for Class I Wilderness areas on WRNF. This task may not occur immediately and will depend on available funds.

INITIAL COST:

\$19,500 – Ozone monitor (EPA certified) and shelter  
\$10,600 – Meteorological Monitor and associated equipment  
\$34,000 – Contractor's estimate (Air Resource Science) to select site, procure, test, and configure instrumentation, train operator, and develop quality control system.

ANNUAL COST:

\$59,000 – operation, routine calibration and maintenance of instruments  
(this is upper end of cost estimate)

2. Survey ozone sensitive vegetation in Class I Wilderness areas. Establish a baseline of injury condition of selected plants.

ANNUAL COST:

\$TBD

3. Continue coordination with Garfield County regarding ozone monitoring efforts where appropriate.

ANNUAL COST:

Covered in administration of WRNF air resource management program

## **F. LICHEN MONITORING (AQRV – FLORA)**

1. Resurvey lichen plots that were established in the Flat Tops Wilderness in 1982 by Dr. Nash. Work would be accomplished by Forest Service employee.

COST:

\$TBD – estimate to be between \$10,000 and \$15,000

2. Establish lichen monitoring plots in Eagle's Nest and Maroon Bells-Snowmass Wilderness areas. Work would be done by Forest Service employee.

COST:

\$2,000 to 3,000 – 2 to 4 plots in Maroon Bells-Snowmass Wilderness

\$2,000 to 4,000 – 2 to 5 plots in Eagle's Nest Wilderness

3. Elemental analyses of lichen samples from Flat Tops, Maroon Bells-Snowmass and Eagle's Nest Wilderness areas. Contract work.

COST:

\$2,500 - \$4,000 – Flat Tops Wilderness samples

\$500 - \$1,000 – Maroon Bells-Snowmass Wilderness

\$500 - \$1,000 – Eagle's Nest Wilderness

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