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MEMORANDUM

TO: MIKE KOERBER, LADCO / MIDWEST RPO
FROM: JAY TURNER, ENVIRONMENTAL ENGINEERING PROGRAM
SUBJECT: SAINT LOUIS - MIDWEST SUPERSITE: YEAR #3 OPERATIONS
DATE: MAY 21, 2003
CC: N/A

The St. Louis - Midwest Supersite commenced PM_{2.5} monitoring in April 2001. Sustained measurements at the East St. Louis (IL) core site now span more than two years, providing a robust time series to support various analyses. The site is colocated with an existing IEPA compliance monitoring site and is approximately 3km east of the City of St. Louis central business district.

This memo summarizes cost estimates for continued PM_{2.5} monitoring at the St. Louis - Midwest Supersite. The proposed scope of work includes one year (July 1, 2003 through June 30, 2004) of semicontinuous monitoring, every sixth day 24-hour integrated sampling and chemical analysis, QA audits, data validation, and baseline analysis and interpretation (e.g., PM mass balances, time series analysis, aerosol climatology characterization). The following considerations should be noted when reviewing the proposed scope of work and cost estimates.

- The cost estimates are non-binding. While they were developed in consultation with the collaborating investigators, I do not have formal price quotes in writing from each of the participants. This will be expeditiously completed upon receiving feedback from potential funding sources.
- The St. Louis - Midwest Supersite core monitoring location is located in East St. Louis, Illinois. It is colocated with an IEPA compliance monitoring site which provides sustained measurements for all criteria gases at 5-minute time resolution. IEPA operations also include every third day PM_{2.5} filter mass using an Andersen FRM and semicontinuous PM_{2.5} mass using a MetOne BAM. These data streams will be incorporated into the overall data set.

TASK #1. Semicontinuous Monitoring and 24-Hour Integrated Sampling, East St. Louis Core Site

One year (July 1, 2003 through June 30, 2004) of sustained semicontinuous monitoring with attendant every sixth day 24-hour integrated sampling at the St. Louis - Midwest Supersite core location in East St. Louis, IL. This task includes the basic infrastructure costs (shelter rental, electricity, telephone, and other miscellaneous site operations expenses); personnel; data

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validation; analysis and interpretation; and QA audits. Project Team: Washington University, Harvard School of Public Health, University of Wisconsin, Desert Research Institute.

Semicontinuous Methods (sustained)

- PM_{2.5} mass (Andersen CAMMS) (1-hour resolution or better)¹
- PM_{2.5} black carbon (Magee Scientific aethalometer) (5-minute time resolution)
- PM_{2.5} sulfate (Harvard method) (1-hour time resolution)
- PM_{2.5} organic carbon (Sunset ECOC) (2-hour time resolution)
- PM_{2.5} elemental carbon (Sunset ECOC) (2-hour time resolution)
- PM_{2.5} nitrate (e.g., Harvard Method or R&P 8400N) (1-hour time resolution)
- Meteorology (10 meter T, P, RH, WS, WD; 2 meter T; Solar Radiation, Precipitation) (5-minute time resolution)

Integrated Methods (every sixth day)

- PM₁₀ mass
- PM_{2.5} mass
- PM_{2.5} elemental and organic carbon
- PM_{2.5} sulfate, nitrate, ammonium (HEADS)²
- PM_{2.5} elements (e.g., XRF)

Estimated Budget - \$ 225,000

OPTIONAL TASK #2. Daily 24-Hour Integrated Sampling, East St. Louis Core Site

Every sixth day integrated sampling would be conducted daily; gravimetric and chemical analysis for the parameters listed above under Integrated Methods.

Estimated Budget - TBD

SCOPE AND COSTING FOR ADDITIONAL OPTIONS AVAILABLE UPON REQUEST

(e.g., trace-level CO measurements; NO_y measurements; a rebuild of the Sunset ECOC instrument to reduce gas requirements and to conform to units currently being sold; hi-volume PM_{2.5} sampling with organics speciation analysis by GC-MS; Particle-into-Liquid Sampler (PILS) operations)

¹ An FDMS retrofit for the R&P TEOM is on loan from the State of Iowa. The TEOM with this retrofit will be periodically deployed at the site.

² Denuder precursor gases (SO₂, HNO₂, HNO₃, NH₃) could be added for an additional cost.