PERFORMANCE WORK STATEMENT
Contract No. EP-C-09-020
Work Assignment No. 1-08:

Title: Procurement of Laboratory Services for the Steam Electric Effluent Limitation Guidelines Rulemaking

Work Assignment Manager: Josh Hall
U. S. Environmental Protection Agency
1200 Pennsylvania Avenue, N. W.
Mail Code: 4303T
Washington, DC 20460
Phone: (202) 566-1002

Estimated LOE: 210 hours

Period of Performance: WA Issuance through February 28, 2011

Background:

The Environmental Protection Agency's (EPA) Engineering and Analysis Division (EAD) is responsible for developing national effluent limitations guidelines (ELGs) regulations for various industrial categories of point source discharges. Currently, EAD is conducting a rulemaking to revise the existing effluent guideline for the Steam Electric Power Generating Industry (40 CFR part 423). As part of this effort EPA intends to collect and analyze wastewaters and related process streams to identify and quantify the presence of a variety of pollutants, with a focus on metals and classical analytes.

The purpose of EPA's sampling is to characterize untreated and treated wastewaters generated by coal-fired steam electric power plants and to evaluate the performance of treatment systems used to treat these wastewaters. EPA intends to collect wastewater samples associated with the flue gas desulfurization (FGD) systems from approximately seven plants over the next year, which will need to be analyzed. Due to the toxicity and bioaccumulative potential of the metals present in the wastewater, as well as the propensity for power plants to dilute the wastestreams prior to discharge, EPA has included the use of analytical methods capable of detecting pollutants at very low concentrations.

Power plant wastewaters have unique characteristics and complex matrices. The wastewaters can contain extremely high concentrations of suspended solids (TSS) and dissolved solids (TDS). TSS concentrations routinely exceed 2-5% solids (20,000-50,000 mg/L) in the influent to FGD wastewater treatment systems. The suspended solids concentration may be high enough that, prior to analyzing pollutant concentrations, the laboratory may need to process the

samples to separate the suspended solids from the aqueous fraction (i.e., "phase separation"). The solid and liquid fractions are then analyzed separately, and then recombined mathematically to determine the concentration present in the original sample. Total dissolved solids (TDS) concentrations can routinely exceed 40,000 mg/L, higher than the TDS levels present in seawater. Chloride levels in some wastewaters are similar to seawater and can be 20,000 mg/L or more. These high levels of chlorides and other dissolved solids can pose significant challenges to laboratory analysts. The wastewaters contain high concentrations of some metals of interest, but at the same time EPA is analyzing for extremely low concentrations of other metals, especially mercury and hexavalent chromium. As a result, EPA may analyze for some parameters using routine methods and others using low-level methods.

The services to be performed under this work assignment (WA) are strictly limited to those of a technical and scientific nature, encompassing the tasks of acquiring laboratory services, including tracking the location and status of collected samples throughout the entire analytical and data reporting process. The contractor shall also coordinate with laboratories to ensure timely and efficient analysis of the collected wastewater samples, and to resolve issues that may arise during sample analysis or during QA/QC reviews of laboratory results.

General Work Assignment Requirements:

Deliverable Formatting and Procedures. Throughout this WA, the contractor shall provide draft and final deliverables to EPA in electronic and hard copy formats. Each initial deliverable shall be provided to the EPA WAM in draft form for review and comment. The contractor shall incorporate procedures to ensure that these drafts are reasonably free from errors before providing them to EPA. The contractor shall incorporate EPA WAM comments into revisions of the drafts, unless otherwise agreed upon by the EPA WAM. All drafts and final reports shall be approved by the EPA WAM. The contractor shall discuss the computer file formats to be used for word processing, spreadsheet, database and graphics with the EPA WAM prior to file preparation. Documents that the EPA WAM identifies for posting on EPA's Effluent Guidelines webpage shall be delivered in a format compliant with public access (i.e., Section 508 compliant). Deliverable due dates are listed in tables included in the work assignment tasks below.

Travel - EPA does not anticipate the need for non-local travel by the contractor employees and/or subcontractors to support this work assignment. In the event that travel is required, all travel shall be in accordance with FAR 31.205-46 and shall be approved in advance by the Project Officer (PO).

Confidential Business Information. The contractor shall, at all times, handle Confidential Business Information (CBI) in accordance with contractual "Section H" requirements and with the "Office of Science and Technology (OST) Confidential Business Information Application Security Plan in the Engineering and Analysis Division (EAD)" dated June 10, 2003, or its successor approved plan. The contractor shall maintain CBI security clearance to use CBI information (Refer to contractual "Section H" CBI requirements and 70 FR 9070; February 24,

2005). The contractor shall not disclose any CBI to anyone other than EPA without prior written approval from the EPA WAM.

Identification as Contractor Staff and Limitation of Duties. To avoid the perception that contractor personnel are EPA employees, contractor personnel shall be clearly identified as independent contractors of EPA when participating in events with outside parties. When speaking with the public the contractor shall refer all interpretations of policy to the EPA WAM. The contractor shall not engage in activities of an inherently governmental nature such as the formulation of Agency policy and selection of Agency priorities.

Personnel Authorized to Direct the Contractor. During the course of this WA the contractor will participate, along with the EPA WAM, in meetings that include other EPA staff and contractor personnel from separate firms providing support to EAD. Under no circumstances shall the contractor take direction (and expend LOE and funds) from these other parties.

Tasks:

Task 1 - Program Management *[PWS 3.0]*

Subtask 1: Work Plan

The contractor shall prepare and submit a detailed work plan presenting the approach and schedule required to perform the tasks identified in this work assignment. The work plan shall describe in detail how the contractor intends to accomplish the work specified for each task and subtask and when these tasks will be completed. In addition, the work plan shall present the contractor's proposed allocation of personnel, labor hours and costs by each task and subtask. The work plan shall also present for EPA's approval the contractor's proposed reporting format for the Sample Tracking Report.

Subtask 2: General Project Management and Reporting

The contractor shall perform general project management and reporting activities under this task, including meetings with the EPA WAM on matters related to the conduct and management of the overall work assignment, preparing periodic reports described below, and similar activities that relate to the overall management of the work assignment. The contractor shall email copies to the EPA PO and WAM, in accordance with the dates shown in the table of deliverables.

- Monthly Progress Report. Shall be submitted per Reports of Work, Attachment 2 of the contract.

- Adherence to the Quality Assurance Project Plan. The contractor shall adhere to the Quality Assurance Project Plan (QAPP), which was developed under WA 6-22 of its contract 68-C-02-095 and documents how quality assurance and quality control will be applied to the collection and use of environmental data under this work

assignment. The QAPP assures that any results obtained are of the type and quality needed and expected under this work assignment. The QAPP addresses the collection and use of wastewater sampling data, any new database management requirements and any other relevant work that might affect the quality of the data. The QAPP describes the controls to ensure high-quality data entry. The text of the QAPP also explicitly identifies tools that the contractor will use in the project to document reproducibility and traceability, such as SOPs, checklists, and guidelines. The tasks in this work assignment require the use specific laboratory methods. The project specific quality assurance issues with laboratory services must be addressed verbally with the EPA WAM as they arise and must be documented in the quarterly progress reports per the QAPP.

- Sample Tracking Report. The contractor shall create and maintain information files which contain the status of all samples collected, including sample collection date, date of sample receipt at the laboratory, date laboratory analytical data is received, status of data quality reviews, and projected timeframes for completing reviews of data. The report shall also identify any anticipated problems or difficulties that might result in scheduling delays. This information shall be provided monthly until all samples collected by EPA have been posted to the Effluent Limitations Guidelines Database, and upon request by the EPA WAM.

In any major deliverable the contractor shall document relevant QA activities. In addition, the contractor shall prepare quarterly reports of the status of QA activities undertaken on this work assignment. The reports will describe:

X Status of data collection efforts;
X Results of any performance evaluations and audits;
X Results of data quality assessments completed during the period of the report;
X Significant quality problems and corrective actions taken; and
X Major products delivered during the period covered by the report, including the preparer(s) and recipients.

DELIVERABLES	
Deliverable	**Due Date**
Work Plan	Within 21 calendar days from receipt of WA
Periodic Reporting of Technical Progress and Cost/LOE Expenditures (i.e., Monthly Progress Report)	Per Attachment 2, Reports of Work of the contract
Quarterly QA Reports	Quarterly
Sample Tracking Report	Monthly, and upon written technical direction

Task 2 – FGD Wastewater Characterization and Treatment System Evaluation for Steam Electric Effluent Limitations Guidelines Rulemaking ***[PWS 3.0, 3.1]***

EPA's Steam Electric ELG rulemaking will characterize wastewater discharges from coal-fired power plants and evaluate the performance of treatment systems used to treat these wastewaters.

The contractor shall coordinate obtaining the services of one or more analytical laboratories to support the analytical needs for the steam electric ELG sampling. The contractor shall establish technical and reporting requirements for the analytical laboratories to ensure that the data generated are reliable and defensible, and that they are consistent with the data and methodologies used throughout all of the sampling episodes.

EPA will be collecting samples for FGD treatment system influent (i.e., scrubber purge), in-process, and effluent from approximately 7 coal fired power plants. Samples are to be analyzed for metals and classical analytes. The contractor shall require that laboratories only use methods in 40 CFR 136, with the exception of 200.8 using collision cell technology and EPA Method 1636 for hexavalent chromium. The attached tables identify the number of samples EPA anticipates collecting and the analytical methods that are to be used by the laboratories. Depending on the parameter being analyzed, the laboratory shall use collision cell instrumentation in the analysis of samples when using Method 200.8, following the Standard Operating Procedures (SOP) for Inductively Coupled Plasma Mass Spectrometry for Trace Element Analysis in Flue Gas Desulfurization Wastewaters samples using Method 200.8. The SOP will be provided by the EPA WAM.

The contractor shall ensure that the laboratories report results in a similar manner for all episodes, including the reporting of results for metals that are below the report limit but above the method detection limit (i.e., J-values). The FGD influent samples are expected to contain high concentrations of suspended solids and will likely require phase separation for certain analytical methods, or alternative approaches for determination of pollutant concentrations for the solid phase, aqueous phase, and total sample. Effluent and in-process samples will contain relatively low levels of suspended solids (on the order of 20-100 ppm) and will not require phase separation.

In obtaining laboratory services, the contractor shall ensure that the laboratory(ies) demonstrates sufficient recent experience and qualifications for analyzing FGD wastewater, including the scrubber purge wastestream. For the purpose of this work assignment, sufficient recent experience and qualifications means that the laboratory has the required instrumentation and successfully used these methods to analyze FGD wastewater within the past two years. In addition, the laboratory must demonstrate sufficient recent experience or capability for analyzing samples of scrubber purge (i.e., FGD influent) using phase separation techniques, or appropriate alternative approaches for determining pollutant concentrations for the solid phase, aqueous phase, and total sample. The contractor shall assist as necessary with the logistics of sampling episodes including sampling coordination, shipping logistics, scheduling activities, monitoring

and laboratory assignments. The contractor shall coordinate with the EPA PO/WAM to schedule the analyses with the respective laboratories. The contractor shall verify that all laboratories meet minimum requirements and that, to the maximum extent possible, all samples collected for an episode are analyzed within specified time requirements.

The contractor shall be in contact with the laboratories performing the analyses and shall notify the EPA WAM both orally and in writing immediately after discovery of problems or delays during sample analysis. The contractor shall include its recommendations for resolving the problem, where appropriate. The contractor shall include an estimate of any cost increases (either by the laboratory or by the contractor) and schedule delays that may be incurred by carrying out the contractor's recommendation. The contractor shall not act upon its recommendations unless approved by the EPA WAM in writing. The Sample Tracking Report shall include a summary of problems identified and the status of efforts to resolve the problems.

The sampling episodes are scheduled to occur between June and October 2010. The contractor shall ensure that contractual arrangements for laboratory services are complete and ready to receive wastewater samples **no later than May 14, 2010.**

If necessary, the contractor shall provide general technical support to EPA regarding analytical methods, data review, quality assurance and the effluent guidelines sampling program. During the period of performance, the contractor may have to respond to approximately 3-5 technical support inquiries. General technical support must be approved in advance by the EPA WAM in writing. The following are activities the contractor may have to perform:

- Provide the EPA WAM with technical responses to analytical method and data inquiries;
- Research solutions to analytical problems;
- Conduct literature searches;
- Fill document requests;
- Provide the raw laboratory data and information related to data review; and
- Track the status and disposition of technical inquiries.

Table 1-1. Wet Chemistry Analytes and Number of Samples

Analyte	Type and Number of Samples					
	FGD Influent (Aqueous)	FGD Influent (Solid) (a)	Effluent and Mid-Point Samples	Field Duplicates	QC Samples	Total Number of Samples
Task 1 - Classical Wet Chemistry Analyses						
Group I						
Total Suspended Solids (TSS)	28	0	40	10	10	88
Total Dissolved Solids (TDS)	28	0	40	10	10	88
Chloride	28	28	40	10	10	116
Sulfate	28	28	40	10	10	116
Total Solids (b)	0	56	0	0	0	56
Group II						
Ammonia as Nitrogen	28	28	40	10	10	116
Chemical Oxygen Demand (COD)	28	0	40	10	10	116
Nitrate/Nitrite (as N)	28	28	40	10	10	116
Total Kjeldahl Nitrogen (TKN)	28	28	40	10	10	116
Total Phosphorus	28	28	40	10	10	116
Total Solids (b)	0	84	0	0	0	84
Other						
Biochemical Oxygen Demand (BOD_5)	28	0	40	10	10	88
Total Cyanide	28	28	40	10	10	88
Total Number of Samples						**1,304**

a – The number of samples required for the FGD influent solids phase analysis is dependent on the number of samples that have a solids concentration greater than one percent solids; therefore, it is possible that fewer FGD influent solids analyses will be required than what is listed in the table.
b – The total solids analysis is included in case it is required by the laboratory to calculate the total sample concentration.

Table 1-2. Mercury Analysis and Number of Samples

Analyte	Method	Type and Number of Samples						
		FGD Influent (Aqueous)	FGD Influent (Solid) (a)	Effluent and Mid-Point Samples	Field Duplicates	QC Samples	Field/Filtration Blank Samples	Total Number of Samples
Task 2 - Trace Mercury Analyses								
Total Trace Mercury								
Total Mercury	EPA 1631E	28	28	40	10	20	17	143
Total Solids (b)		0	28	0	0	0	0	28
Dissolved Trace Mercury								
Dissolved Mercury (including filtration)	EPA 1631E	28	0	40	10	20	0	98
Filtration Blank	EPA 1631E	0	0	0	0	0	28	28
Total Number of Samples								**297**

a – The number of samples required for the FGD influent solids phase analysis is dependent on the number of samples that have a solids concentration greater than one percent solids; therefore, it is possible that fewer FGD influent solids analyses will be required than what is listed in the table.
b – The total solids analysis is included in case it is required by the laboratory to calculate the total sample concentration.

Table 1-3 Metals Using EPA Method 200.7 or 200.8 [a]

Number of Samples

Analyte	Type and Number of Samples						
	FGD Influent (Aqueous)	FGD Influent (Solid) (b)	Effluent and Mid-Point Samples	Field Duplicates	QC Samples	Field Blank Samples	Total Number of Samples
Task 4 - Metals Analyses							
Total Metals							
Total Metals (a)	56	56	80	20	40	34	286
Total Solids for Total Metals Samples (c)	0	56	0	0	0	0	56
Dissolved Metals							
Dissolved Metals (a)	56	0	80	20	40	34	230
Dissolved hexavalent chromium**	28	0	40	10	20	17	115
Total Number of Samples							**687**

a – A draft SOP for the method 200.8 is provided in Appendix A. This SOP will identify which metals must be analyzed using 200.8 with either the Collision Cell (CC) technology. The laboratory may propose to use either EPA Method 200.7 or 200.8 in the normal mode to analyze the remaining metals. However, the same methods must be consistently used for all samples for all seven sampling episodes. See list of analytes below:

Aluminum	Chromium (hexavalent)**	Selenium
Antimony	Cobalt	Silver
Arsenic	Copper	Sodium
Barium	Iron	Thallium
Beryllium	Lead	Tin
Boron	Magnesium	Titanium
Cadmium	Manganese	Vanadium
Calcium	Molybdenum	Zinc
Chromium	Nickel	

b – The number of samples required for the FGD influent solids phase analysis is dependent on the number of samples that have a solids concentration greater than one percent solids; therefore, it is possible that fewer FGD influent solids analyses will be required than what is listed in the table.
c – The total solids analysis is included in case it is required by the laboratory to calculate the total sample concentration
**- Hexavalent Chromium is not analyzed using 200.7 or 200.8. Lab should use EPA method 1636.