

HANFORD ANALYTICAL SERVICES MANAGEMENT: ONE OF THE KEYS TO EFFECTIVELY MANAGING THE HANFORD SITE IN AN ENVIRONMENT OF COMPETING RESOURCES AND PRIORITIES

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ABSTRACT

The unique benefits of working at the Hanford Site are the opportunities to develop and implement creative solutions to significant challenges. These issues usually have a relatively large price tag and always need solutions that not only work, but are cost effective and in the nation's best interest.

One such challenge is how to ensure that the Hanford Site has access to high-quality, cost-effective analytical services to meet the needs of our environmental and waste management organizations.

With the need identified and a recognition by DOE-Richland Operations Office (RL) and the site contractors that a creative solution was in order, RL sponsored a Quality Improvement Team to determine how to better meet the Hanford Site's analytical needs.

The Quality Improvement Team recognized that a true partnership between RL and the Hanford Site contractors had to be established to 1) identify what the analytical needs were for the site, both short and long term, 2) determine how to meet those needs, whether by using onsite capability or contracting offsite services, and 3) ensure that all analytical services meet the high level of quality demanded by the end users of the data.

The Hanford Analytical Services Management (HASM) organization was established from this concept. What makes HASM unique and virtually guarantees success is that all the participants within HASM, site contractors and RL, have parity. This ensures that the best interests of the Hanford Site are implemented and minimizes the normal parochialism when multiple contractors are competing for the same work.

The HASM concept provides for consistent management to balance the analytical needs with the limited resources identified for analytical services at the Hanford Site. By contracting for analytical services, HASM provides a mechanism to meet site goals of increased commercialization.

HANFORD ANALYTICAL SERVICES MANAGEMENT

MISSION: Hanford Analytical Services plans, coordinates, and negotiates sitewide activities between all Hanford programs and the analytical laboratories. They include the following:

Establishing a baseline for Hanford analytical needs and the corresponding baseline of analytical capability.

- Compile and evaluate customer requirements.
- Review data quality objectives, protocol and regulatory requirements, and turnaround times.
- Analyze trends to plan future analytical services resources.
- Determine capability, capacity, and availability of laboratories.
- Manage commercial laboratory contracts.
- Track/trend laboratory performance.
- Plan and integrate facility upgrade programs for onsite laboratories.
- Manage priority samples at onsite laboratories.

Managing the sample flow to the laboratories.

- Integrate needs and resources.
- Schedule analytical services based on Hanford program priorities.
- Track sample status.
- Manage data receipt, storage, and transmittal.

- Approve laboratory invoices for payment.

Ensuring the technical credibility of the Hanford Site and offsite laboratories and the validity of data packages.

- Conduct performance assessment of onsite and offsite laboratories.
- Validate data packages.
- Monitor laboratory performance in established Performance Evaluation Programs.

Providing baseline funding for onsite laboratories.

The Need to Effectively Manage Multiple Laboratories in a Changing Environment Necessitated the Formation of the Hanford Analytical Services Structure

- The Hanford Site mission was redirected from nuclear materials production to environmental restoration.
- The function of the analytical laboratories shifted from process control to environmental analyses and characterization of high-level wastes stored in underground tanks.
- A large increase in sample load required expanded capacity and further use of commercial laboratories.

Hanford's New Mission

- Plutonium production reactors and chemical processing plants are shut down and being decommissioned.

- Environmental restoration is underway with commitments established by the Hanford Federal Facility Agreement and Consent Order--the Tri-Party Agreement between the Washington Department of Ecology, the EPA, and the DOE.
- The plan includes separation of stored radioactive wastes into high- and low-level fractions and conversion into forms suitable for disposal.
- Contaminated areas of the Hanford Site are being characterized and cleaned up.

New Mission Affects on the Analytical Laboratories

- New customers have new requirements and expectations.
- New analytical instruments and procedures have been implemented to meet customer requirements.
- Additional controls on field sampling, transportation, sample handling, archiving, chain of custody, and quality control in the laboratory have been implemented.
- More strict requirements for data quality, documentation, and turn around times.
- Extensive training of personnel to meet the new requirements.

The Total Quality Process

- Clearly define and agree on the customer's requirements; establish measurable goals and schedules.
- Develop an overall strategy to meet the goals and identify barriers that hinder their achievement.
- Establish initiatives to remove barriers and to continue improving areas of acceptable performance.
- For each initiative assign responsibility, set schedule and performance measurements via broad participation by the laboratories and clients.
- Provide feedback and assessment of results through routine updates.
- Continuously communicate plans, expectations, progress, and results using all available media.

INITIATIVES FOR THE ANALYTICAL LABORATORIES AT THE HANFORD SITE

Expand Analytical Capability and Capacity to Meet Projected Needs

- Provide new and additional analytical instruments.
- Provide new laboratory facilities: low-level environmental laboratory, new shielded hot-cells for analyzing highly radioactive wastes; proposed laboratory for analyzing mixed waste containing transuranic elements.
- Provide personnel additions and training.
- Provide additional commercial laboratory contracts.

Development and Application of New Technology

- Use supercritical fluid extractions and solid phase extraction to reduce the use of hazardous chemicals.
- Use ICP/MS to analyze long-lived radionuclides.

- Implement in-cell screening techniques for characterizing high-level wastes.
- Implement a new laboratory information management system.

More Disciplined Laboratory Operations

- Emphasize safety performance.
- Implement application of Conduct of Operations principles.
- Implement rigorous control of sample and data flow.
- Implement chemist/technologist teaming.

Improved Management Systems and Communications

- Implement a new organization to integrate customer analytical needs with laboratory resources, multi-contractor, and multilaboratory.
- Coordinate all onsite laboratories to distribute work load.
- Integrate laboratory performance assessments.
- Communications via employee discussions, work place meetings, all-employee meetings, all-manager meetings, new releases, event reporting special notices, and customer feedback.
- Use performance indicators and trends.

Improved Data Quality and Timeliness

- Implement an application of Data Quality Objectives process.
- Participate in structured performance evaluations.
- Focus on data verification and validation.
- Reduce turnaround times.
- Implement a Total Quality Improvement Plan.
- Implement the Hanford Analytical Services Quality Assurance Plan.

REGULATORY REQUIREMENTS IMPOSED ON THE HANFORD ANALYTICAL SERVICES

The operation of the onsite laboratories at the Hanford Site is carried out according to U.S. Department of Energy (DOE) Orders. DOE Orders provide the mechanism through which DOE Headquarters conveys regulatory requirements to its field office operations. Specific contractors often impose additional operational requirements on the laboratories they manage.

In addition to operational requirements, analytical services must be able to comply with a variety of environmental statutes and associated regulations. These include, but are not limited to, the following:

- *Resource Conservation and Recovery Act (RCRA)* – Waste management operations and cleanup at permitted facilities
- *Comprehensive Environmental Response, Compensation, and Liability Act, Superfund Amendments and Reauthorization Act (CERCLA/SARA)* – Environmental restoration and remediation
- *Clean Water Act (CWA)* – Surface water protection
- *Safe Drinking Water Act (SDWA)* – Drinking water protection

- *Clean Air Act (CAA)* – Ambient air and source pollutant emissions to ambient air
- *Toxic Substances Control Act (TSCA)* – Toxic substances control
- *Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement or TPA)* – Comprehensive negotiated agreement among the DOE, U.S. Environmental Protection Agency, and the Washington State Department of Ecology.

Additional regulatory requirements include the *National Environmental Policy Act*, the *Atomic Energy Act*, the *Low-Level Waste Policy Act*, and the *Nuclear Waste Policy Act*.

CURRENT HANFORD ANALYTICAL SERVICES INITIATIVES

- Implement the Data Quality Objective process.
- Implement a capacity study.

- Implement a Hanford Performance Evaluation Program.
- Implement the Hanford Analytical Services Quality Assurance Plan (HASQAP).
- Implement the LABCORE Laboratory Information Management System.

CONCLUSION

- The 1989 Hanford Site cleanup mission significantly changed the scope of the analytical laboratory operations requiring a new innovative approach to the management of Analytical Services.
- Application of a total quality process has enabled the Hanford Site laboratories to meet challenging performance objectives.
- To ensure continued success, Hanford Laboratory management and operations is committed to continuous improvement.