



CH2MHILL

Applied Sciences Laboratory

Laboratory Development Services

- Laboratory Design
- Quality Assurance Audits
- Laboratory Staffing and Operations
- Laboratory Program Evaluations and Development

Many municipal drinking water, waste treatment, and industrial facilities operate their own laboratories for the purposes of process control, environmental monitoring, and discharge compliance. While they often do not require the services of outside commercial laboratories, they may need assistance with developing new test methods, writing quality assurance documentation, assessing the laboratory's ability to meet upcoming regulatory requirements, or perhaps designing a new laboratory space.

CH2M HILL's Applied Sciences Laboratory (ASL) employs a number of senior scientists throughout North America who routinely assist clients with a variety of laboratory evaluation and development services. With expertise in laboratory design, analytical chemistry, physical sciences, biology, microbiology, and toxicology, ASL scientists identify the best scientific approach and develop the correct programs to meet the customer's needs.

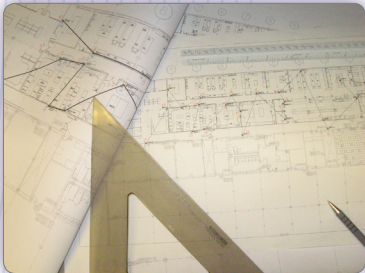
Laboratory Design

From temporary "field" laboratories in the remote tundra of Northern Alberta to comprehensive central laboratory facilities for large

municipalities, ASL has assisted customers with new laboratory design, construction, method development, training, or staffing. Many customers under-estimate the complexities of starting up a new laboratory. In order to meet the requirements of stricter process control or increased specificity in effluent constituent measurements, facilities must be designed and equipped to provide proper ventilation, segregation of sample preparation and analysis areas, proper chemical storage, adequate safety equipment, ample workstation space, and proper sample storage and control areas. ASL can leverage our experience with a variety of municipal and industrial customers to assure a solution which meets the needs of the project.

Laboratory Audits

For laboratory owners, their laboratory facilities represent both a liability and a considerable, ongoing capital investment. They rely on periodic audits to ensure compliance with performance standards. Often times, an audit by a third-party consultant is desired ahead of a scheduled audit by a regulatory agency. A third-party audit can provide invaluable feedback on areas of concern or provide advice and assistance in the development of



existing programs. For customers that use external commercial laboratory services, laboratory audits are a way to verify that the laboratory they are using is providing analytical data of the highest quality. Laboratory audits may also include detailed inspections of management, administration, quality control, work flow, documentation, information systems, and personnel by an unbiased expert.



Quality Assurance Programs

Even though a laboratory may have written test procedures, there is often a regulatory need or a liability need to develop a broader, more substantial quality assurance program. The documentation for the quality assurance program is typically referred to as a quality assurance plan (QAP). The QAP will detail the overall administrative structure, identify a quality control officer, and provide guidelines for purchasing and storing chemicals, recording sample custody, reporting and storing data, health and safety requirements or procedures, and laboratory conduct or ethics. The quality assurance program also covers the creation and control of standard operating procedures (SOPs) for sample collection, handling, preparation, analysis, and reporting.

Laboratory Training and Staffing

ASL can provide scientific consultants who are technical experts in their field to assist with the development of laboratory programs. ASL consultants work side-by-side with



the laboratory staff to develop new methods or commission new instruments. This approach allows the customer to begin analyzing samples in a short period of time. ASL can also provide scientists on a short or long-term basis to analyze samples or provide laboratory management services at the customer's laboratory. These staffing solutions are often an effective approach to dealing with unexpected or temporary changes in workload.

Recent ASL Projects

- Developing a laboratory program to support a large wastewater treatment pilot plant at a Middle-Eastern petrochemical facility
- Developing an automated data collection/information management system, and providing implementation and operator training
- Auditing a municipal drinking water microbiology laboratory and providing enhanced documentation development
- Reviewing quality control programs and analytical methods for product stewardship laboratories (e.g., lead in textiles and other consumer products) in Asia
- Provided lab needs studies for several major oil companies
- Complete conceptual designs for central lab facilities (water quality and bitumen quality) at two large oil sands insitu extraction complexes

Contacts

For more information on this and other services CH2M HILL's ASL can provide, please contact:

ASL Customer Service
(asl@ch2m.com)
541-768-3120



CH2MHILL
Applied Sciences Laboratory