



Statement of Qualifications 2018-2019

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SOPAD036.05.18.10

Subject

Certifications

Facilities

- Floor plan
- Instrumentation
- Computer Hardware and Software

Related Experiences

- Mining
- In Vitro Bioaccessibility
- Multiple Incremental Sampling (MIS)/Incremental Sampling Methodology (ISM)
- Petroleum/Petrochemical
- Biological Tissue
- Leach Studies
- Municipal Landfill and POTW
- BLM / USFS / USACE / State AML Programs / Tribal / DOE

Personnel

- Organizational Chart

Fee Schedule

See Separate File

- Water and Wastewater
- Soil and Overburden
- Solid and Hazardous Waste
- Biological Tissue
- Regulatory Parameters and Packages

Quality Assurance Plan (QAP)

See Separate File

Performance Evaluation (PE) Sample Results

See acz.com

- WS/WP Studies
- EPA EMSL Radiochemistry Round Robin Studies

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Certificates

ACZ maintains laboratory accreditation with the agencies listed below:

- NELAP Utah, Primacy Certification
- Radioactivity License
- USDA Foreign Soils Permit
- Alaska
- Arizona
- Arkansas
- California
- Colorado Drinking Water
- Hawaii Radiochemistry Drinking Water
- Montana Radiochemistry Drinking Water
- Nevada
- New Mexico
- Oklahoma
- Oregon
- Texas
- Washington

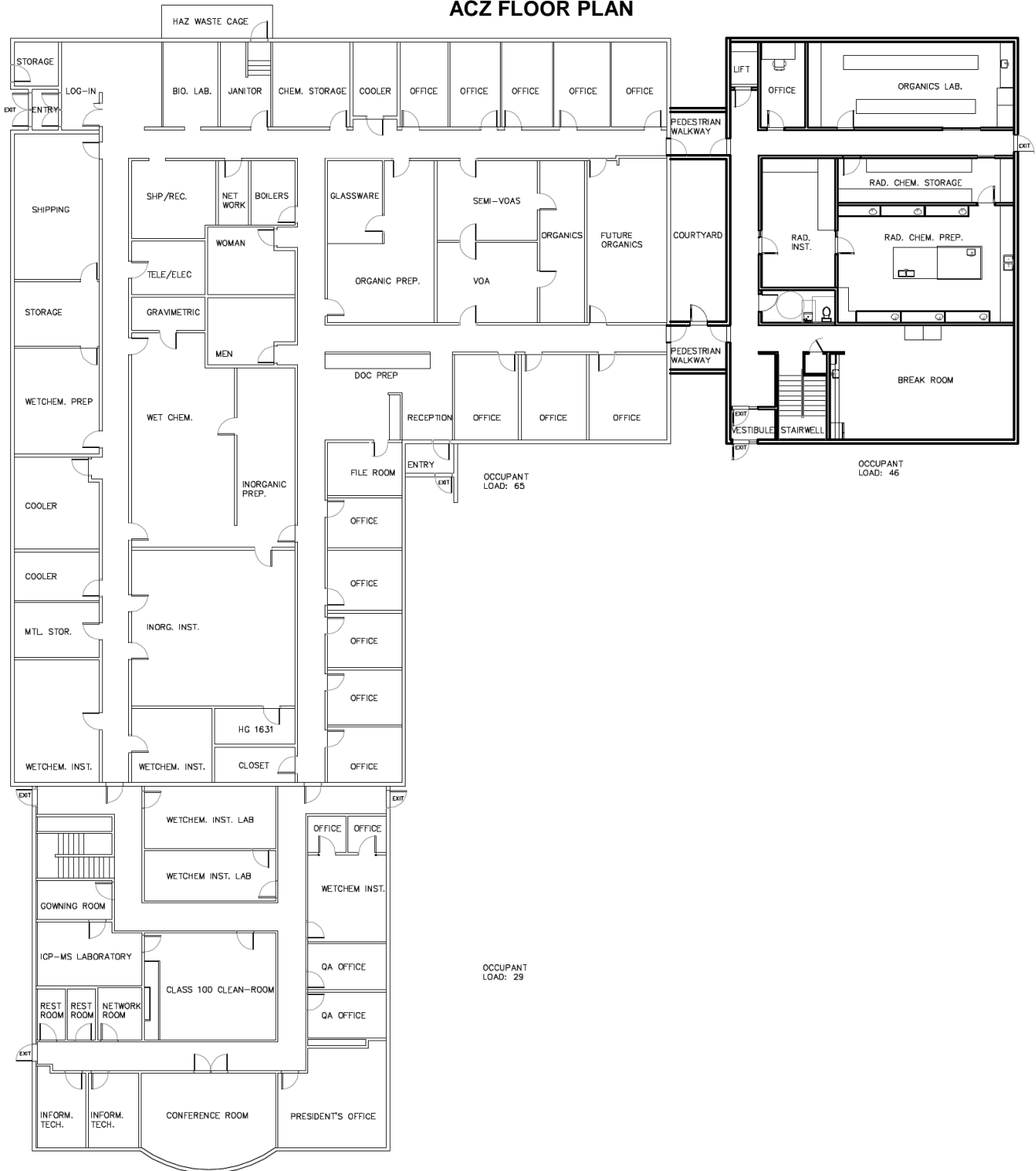
Scopes of accreditation vary depending on agency characteristics and client demand. Current certificates may be viewed at <https://acz.com/index.php/about-us/certifications/> .

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2773 Downhill Drive, Steamboat Springs

ACZ FLOOR PLAN



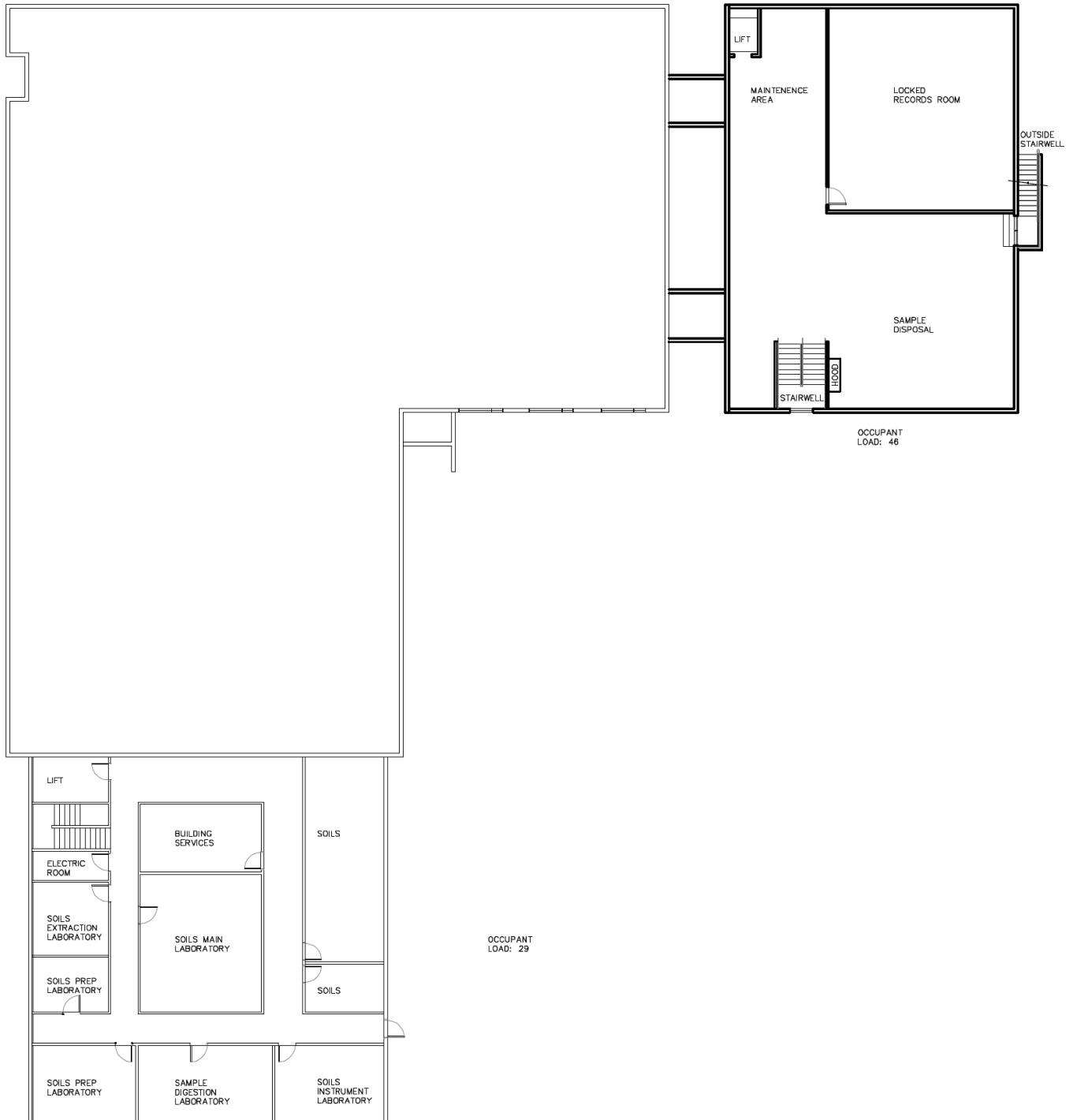
ACZ LABORATORY INC.

MAIN LEVEL PLAN

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BASEMENT LEVEL PLAN

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Laboratory Instruments

Inorganic Instrument

| # | Type | Brand & Model | Auto-sampler | Computer | Purchase Date |
|---|-------------|---|--------------|---------------------------|---------------|
| 1 | CVAFS | Teledyne-Cetac QuickTrace M8000 | 50 place | QuickTrace | 11/13 |
| 1 | ICP/MS | Agilent 7900 w/ Octopole Reaction System 4 (ORS4) | 180 place | MassHunter | 8/14 |
| 1 | ICP/MS | Agilent 7500 C-E (Octopole Reaction Cell) | 180 place | Pentium with Chem-Station | 12/05 |
| 1 | ICP/MS | Thermo iCAP RQ | 180 place | Qtegra | 5/18 |
| 1 | ICP | Thermo iCAP 6500 Radial | 270 place | iTEVA | 2/11 |
| 1 | ICP | Thermo iCAP 6300 Radial | 120 place | iTEVA | 4/13 |
| 1 | Hydride AA | Thermo iCE3000 | 150 place | HP | 5/07 |
| 1 | CVAA | Teledyne-Cetac QuickTrace M7600 | 88 place | QuickTrace | 5/16 |
| 1 | Hg Analyzer | Milestone – DMA-80 | 40 place | Milestone | 5/09 |
| 3 | Autoblock | Thomas Cain - DEENA | 60 place | Thomas Cain | 4/13 |

Wet Chemistry

| # | Type | Brand & Model | Auto-sampler | Computer | Purchase Date |
|---|-------------------|-------------------------------|--------------|-------------|---------------|
| 1 | FIA | QuikChem 8500 | 360 place | Omnion | |
| 1 | FIA | QuikChem 8500 | 360 place | Omnion | 10/04 |
| 1 | IC | Dionex ICS2000 | AS-40 | Chromeleon | 10/05 |
| 1 | IC | Thermo ICS2100 | | Chromeleon | |
| 1 | TOC | Skalar – FormacsHT | 150 place | Skalar | 7/10 |
| 1 | Spectrophotometer | HACH DR4000V | NA | NA | 12/14 |
| 1 | Spectrophotometer | HACH DR3900 | NA | NA | |
| 1 | FIA/SFA | OI FS 3100 | | WinFlow | |
| 1 | FIA/SFA | OI FS 3700 | | Flowview | |
| 1 | Discreet Analyzer | AquaKem - 250 | internal | Aquakem | 2/07 |
| 1 | Auto Titrator | ManTech – PC – Titration Plus | 55 | Titrate V.3 | 9/03 |
| 1 | Auto Titrator | ManTech – PC – Titration Plus | 104 | Titrate V.3 | 7/14 |

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Soils

| # | Type | Brand & Model | Auto-sampler | Computer | Purchase Date |
|---|--------------------------|-----------------------|--------------|-----------|---------------|
| 1 | Microwave | Milestone – Ethos EX | 10 | Milestone | 12/10 |
| 1 | Sulfur / Carbon Analyzer | LECO - SC-632 | 50 place | LECO | 8/12 |
| 1 | Sulfur / Carbon Analyzer | LECO - SC-832 | 100 place | LECO | 4/18 |
| 1 | TCLP | TCLP Rotary Extractor | 10 place | none | 5/92 |
| 2 | TCLP | TCLP Rotary Extractor | 12 place | none | 11/08 |

Facilities
Instruments & Equipment

Laboratory Instruments**Organics**

| # | Type | Brand & Model | Auto-sampler | Computer / software | Purchase Date |
|---|--------------|---------------------|--------------|---------------------|---------------|
| 4 | GC | HP 5890 II | | Chemstation | 1/10 |
| 1 | GC | HP 6890N | | Chemstation | |
| 2 | GC | HP 7890A | | Chemstation | |
| 1 | GC/MS | HP 5890/5973 | 100 place | Chemstation | 1/99 |
| 1 | GC/MS | Agilent 6890/5975 | OI 4552/4660 | Chemstation | 7/06 |
| 2 | GC/MS | Agilent 7890A/5975C | OI 4552/4660 | Chemstation | |
| 1 | GC/MS | Agilent 5890/5973N | OI 4552/4660 | Chemstation | 1/10 |
| 1 | GC/MS | Agilent 6890/5973N | | Chemstation | |
| 1 | Oil & Grease | Horizon 3000XL | NA | NA | |
| 1 | Oil & Grease | Horizon 3100 | NA | NA | |

Radiochemistry

| # | Type | Brand & Model | Auto-sampler | Computer | Purchase Date |
|----|------------------------------|---|---------------|---|-----------------|
| 13 | Radon Flask | Ludlum - Model 182 | N/A | 2model 2000 Scaler 3model 1000 Scaler | 11/91- 11/17 |
| 2 | Scaler | Ludlum - 2000 | N/A | N/A | 2/90 2/11 |
| 3 | Survey Meter | Ludlum - Model 3 | N/A | N/A | 10/97 |
| 1 | / Counter | EG & G Berthold LB 770 Alpha/Beta System | 10 place man. | EG&G Berthod 770 Version 2 | 12/95 |
| 1 | / Counter | Gamma Products - G542-16-MQUAD | 16 place man. | G5000W | 9/17 |
| 2 | Alpha Spec. | ORTEC - OCTETE Plus | 16 place man. | Alpha Vision 6 – Maestro | 12/13 |
| 2 | Gamma | EG & G - GMX15P4-70 | Manual | Gamma Vision 32 | 9/97 |
| 1 | Liquid Scintillation Counter | Beckman LS 6000 TA | Auto Sampler | LS 6000 Series Winn Connection suite. Version 1.1 | 7/95 |

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Computer Equipment

Software and Hardware

ACZ is constantly investing in new software applications and hardware to ensure that the company can take advantage of the latest technologies. The core server technology is a network based on both SuSE Enterprise Linux and Windows Server. The ACZ LIMS (Laboratory Information Management System) uses an Oracle database running on an HP DL580 server under SuSE Linux. An identical server is maintained for testing and as a standby should the production server fail. ACZ maintains a large number of Windows-based servers which perform a variety of network tasks including archiving of all lab data (In April 2007, ACZ Laboratories established a record retention period of 10 years), systems backup, web server hosting, email hosting, and systems health monitoring. Data backups are performed nightly. Backups are stored both on and off-site. ACZ uses MS Office applications for its business communication needs.

The network itself consists of approximately 100 PCs. Most of these are capable of running ACZ's proprietary LIMS front-end. The front end is an MS Access VBA application. The LIMS is an extension of the Labvantage Seedpak application. An Oracle Forms based interface to the Seedpak core is also maintained by ACZ.

Approximately 40 of the network PCs control instruments. Instrument data from these computers is directly uploaded to the ACZ LIMS. Instrument PCs and software are consistently upgraded to utilize the latest updates from our instrument vendors. Additionally, five PCs are licensed to produce EPA CLP and CLP-like deliverables for ILM 4.2 and ILM5.3 SOWs.

All software on the ACZ network is restricted to approved applications. All software on the network is monitored for compliance to this policy and all software is properly licensed.

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ACZ Laboratories has over 38 years of experience providing analytical support to the mining industry and has built a reputation as one of the highest quality environmental laboratories in the industry. Approximately sixty to seventy percent of our current clients are directly involved with the mining industry. We support mining operations throughout the United States including Alaska as well as international operations in Africa, Central & South America, Russia, and Asia.

ACZ is able to support our mining clients in all areas of environmental analytical services including routine groundwater and surface water monitoring, overburden testing, acid-base accounting (all Nevada NDEP/BLM Rock Characterization methods), kinetic testing including ASTM D5744-13 Humidity Cell Testing, and bioaccumulation studies. This broad range of analytical support coupled with a staff that is highly experienced in the matrix difficulties inherent to many mining related samples makes ACZ one of the leading environmental laboratories supporting the industry. ACZ's USDA Foreign Soils Permit allows for samples to clear customs without any delay or quarantine.

Types of Mining Operations Supported:

- Gold / Silver
- Copper
- Coal
- Uranium
- Vanadium
- Molybdenum
- Soda / Trona
- Rare Earth
- Cobalt
- Zinc

Types of Matrices Analyzed:

- Groundwater
- Surface Water
- Wastewater
- Tailings
- Soil
- Overburden
- Air Filters
- Sludge
- Plant Tissue
- Animal Tissue
- Waste (RCRA)

Please contact an ACZ representative for a list of specific references from the mining industry.

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In Vitro Bioaccessibility (IVBA)

In vitro bioaccessibility analysis measures the potential hazard from ingestion of metals in soil, dust or other solid-like waste material. The in vitro bioavailability or in vitro bioaccessibility methods were developed to replace the much more costly oral in vivo test, which are conducted on live animals.

EPA In Vitro Method 9200.2-86/RCRA 1340 estimates the oral bioaccessibility of both lead and arsenic from soil by simulating the stomach fluid of a swine. The analysis is highly controlled in terms of temperature as well as pH of the fluid.

ACZ has worked with various industries for in vitro bioaccessibility testing including: brownfield cleanup projects, contaminated mine and industrial sites, as well as USFS, BLM and US military firing range cleanups. Many of ACZ's clients have benefited both scientifically and financially when their sites under investigation were not forced to remove contaminated soils. This was due to the fact that the metals contamination was deemed not bioaccessible.

In 1999, ACZ was one of a few laboratories in the nation to be selected to participate in the Solubility/Bioavailability Research Consortium (SBRC). ACZ has subsequently been selected to participate in validation of standard reference material used in the EPA in vitro bioaccessibility methods.

Multiple Incremental Sample (MIS) / Incremental Sampling Methodology (ISM)

ACZ follows the State of Hawaii Department of Health, Hazard Evaluation and Emergency Response Office, Technical Guidance Manual (MULTI-INCREMENT Sampling) MIS®, Section 6 of the ITRC ISM guidance document.

ACZ has provided analytical support for multiple soils projects from Hawaii that have required that the lab follow the MIS document, section 4.2.6 Laboratory Preparation of Samples.

Projects have included: IVBA for Arsenic, inorganic and organic parameters for site investigations and clean ups.

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ACZ has over 38 years of experience serving the petroleum industry. Throughout a variety of projects ranging from long-term monitoring to short-term assessment studies, we have maintained a high level of data quality while meeting our customers' needs. We understand that quick turn-around times are inherent to the needs of the petroleum industry. ACZ is committed to meet our clients' expectations and project requirements.

ACZ routinely works with refineries, pipelines, oil and gas production, oil shale pilot plants and UST sites on monitoring and natural attenuation, site assessments, and remediation projects. In addition to identifying Hydrocarbons, PCBs, or other organic contaminants, ACZ is capable of providing "fingerprinting" for identification of fuels. We also have the capacity to handle large on-going projects requiring both organic and inorganic RCRA analyses. We routinely perform monitoring on domestic wells surrounding oil and gas developments in Colorado and perform all of the Colorado 910-1 soil tests in-house. ACZ also provides support to oil and gas exploration and production companies by helping to characterize wastes streams with the potential for high concentrations of TENORM (technically enhanced naturally occurring radioactive material). This includes analysis on produced water, solids and liquids from tank bottoms, filter socks, retired pipe, sludge, and residual materials. Our data quality and customer service combine to make ACZ a good choice for the petroleum industry.

Types of Projects Supported:

- Surface/Groundwater Monitoring
- Site Assessments
- UST Analyses
- Hazardous Waste Characterization
- Spill clean ups

Types of Matrices Analyzed:

- Ground Water
- Produced Water
- Oil
- Soil
- Rags
- Sludge
- Pipe Segments

Please contact an ACZ representative for a list of specific references from the petroleum industry.

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ACZ has over 35 years of experience in analyzing biota for trace metals, radiochemical, and PCB contaminants. We have prepared and analyzed a variety of biota samples from across the world, including the Antarctic and the South Pacific. Due to the sensitivity of native organisms to many low-level man-made contaminants, ACZ protocol includes rigorous QA/QC to determine and verify our results. We supply litigation-quality data that will withstand extensive review.

Dual instrumentation in our facility enables us to accept large projects and maintain timely delivery of results. Our cleanroom allows us to see trace levels of metal contaminants that otherwise would not be detected. ACZ made a substantial investment in this area with the purchase of three Agilent (HP) 7500 ICP-MSs, SETAC Quick-trace M-8000 Mercury Analyzer, and Milestone DMA-80 Direct Mercury Analyzer for Solids and Solution by Thermal Decomposition. As federal and state regulations get more stringent, ACZ will be capable of supporting the new, lower detection limits required for biota testing.

ACZ has performed trace metals analysis on minuscule samples using a micro-digestion and a smaller final sample volume in order to achieve very low detection limits. We are also capable of homogenizing large samples and performing analysis on a representative aliquot, as well as prepping deer mice, which may carry hanta virus in a level III bio-safety hood. Our experience and our facility set us apart in this area of environmental analysis, and we are proud to be an industry leader.

Types of Projects Supported:

- PCB Contamination in Aquatic Tissue
- Radiochemical Contamination in Benthic Organisms
- Complete Bio-Accumulation Studies
- Trace Metal Analysis in Small Mammal Organs, benthic tissue, plant tissue, fish

Types of Biota Analyzed:

- Fish (both large and small)
- Snakes/Small Reptiles
- Insects
- Small Mammals
- Benthic Organisms
- Plants
- Birds / Avian
- Muscle / Organ Plugs from large mammals

Please contact an ACZ representative for a list of specific projects relating to biological tissue studies.

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ACZ has over 38 years of experience in performing various leach studies. We have performed long-term humidity cell tests (EPA and ASTM), upflow/downflow column leach studies, serial and sequential batch extractions and analyses, Meteoric Water Mobility Procedure (MWMP) testing, SHAKE tests and other leachability and attenuation studies. Our technical knowledge, skills, attention to detail, and high quality data make us a dominant force in this analytical niche.

During our extensive history in the mining industry, ACZ has taken part in many unique leach studies. We are able to implement client-specific modifications to any given variable and thus make the study more similar to each site's actual situation. Both long-term and short-term studies are valuable for making predictions about acid rock drainage, waste leachability, and the migration of hazardous ions through soil. ACZ's experienced and knowledgeable staff can assist with technical support in this area; call your ACZ representative for more details.

Types of Leach Studies Performed:

- Long-Term Humidity Cell Testing (20-40 weeks)
- Continuous Column Leaching
- Serial Batch Extraction Testing
- Meteoric Water Mobility Testing
- Toxicity Characteristic Leaching Procedure
- Synthetic Precipitation Leach Procedure
- Waste Extraction Test-WET (California Administrative Code)

Please contact an ACZ representative for a list of specific projects relating to leach studies.

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Municipal Landfill and POTW

ACZ has over 30 years of experience in municipal landfill and POTW sludge monitoring and analysis. We can analyze a wide range of parameters on a variety of matrices including drinking water, surface water, wastewater, groundwater, soil, sludge, and other biosolid material.

Our ICP-MS instrumentation in a class-100 cleanroom allows us to detect ppb and lower levels of heavy metals in drinking and surface water. We also provide analytical testing services for long-term groundwater monitoring near landfills. Along with quarterly testing of influent and effluent for wastewater treatment plants, we perform routine monitoring on surface waters, soils, and plant tissue. We also test WWTP sludge for land application requirements.

ACZ provides our clients high quality data in a timely manner. A commitment to quality and extensive experience make ACZ the right choice for your analytical service needs.

Types of Municipality Projects (including Landfills, POTW, WWTP):

- Long-Term Groundwater Monitoring
- Influent/Effluent Testing
- Drinking Water Testing
- Sludge Testing
- Hazardous Waste Characterization
- Low-Level Surface Water Monitoring

Please contact an ACZ representative for a list of specific projects relating to Municipal Landfills and POTW work.

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BLM / USFS / USACE / State AML Programs / Tribal / DOE

ACZ has over 30 years experience working with multiple state and federal agencies on hundreds of Abandoned Mine Land (AML) projects and contaminated site investigations, including the Department of Energy's (DOE) Uranium Mine Tailings Remedial Action (UMTRA) program as a contract lab. Many projects have involved multiple waste streams requiring analysis for inorganic, organic, and radiochemical parameters on a variety of matrices. Full Level IV and CLP-Like data reporting, including Electronic Data Deliverables, are available for parameters listed under the USEPA CLP QAP.

Department of Energy Experience:

- Uranium Mine Tailings Remedial Action (UMTRA) contract lab
- Hanford Site, Groundwater / Soil investigation project (inorganic, organic, radiochemical)
- Oak Ridge – Y-12 site remediation project
- LANL site remediation Projects
- Rocky Flats background Monitoring and biota testing for low-level radiochemical parameters

BLM/USFS/USACE Experience:

- Watershed water quality baseline studies.
- Illegal dumping site characterization of unknown waste
- AML site investigation and clean-up analytical support
- USACE validation (metals and radiochemistry)
- USACE Restoration of Abandoned Mine Sites (RAMS) Western Region (multiple mine projects)
- IVBA Lead projects in National Parks and State park firing range clean-ups

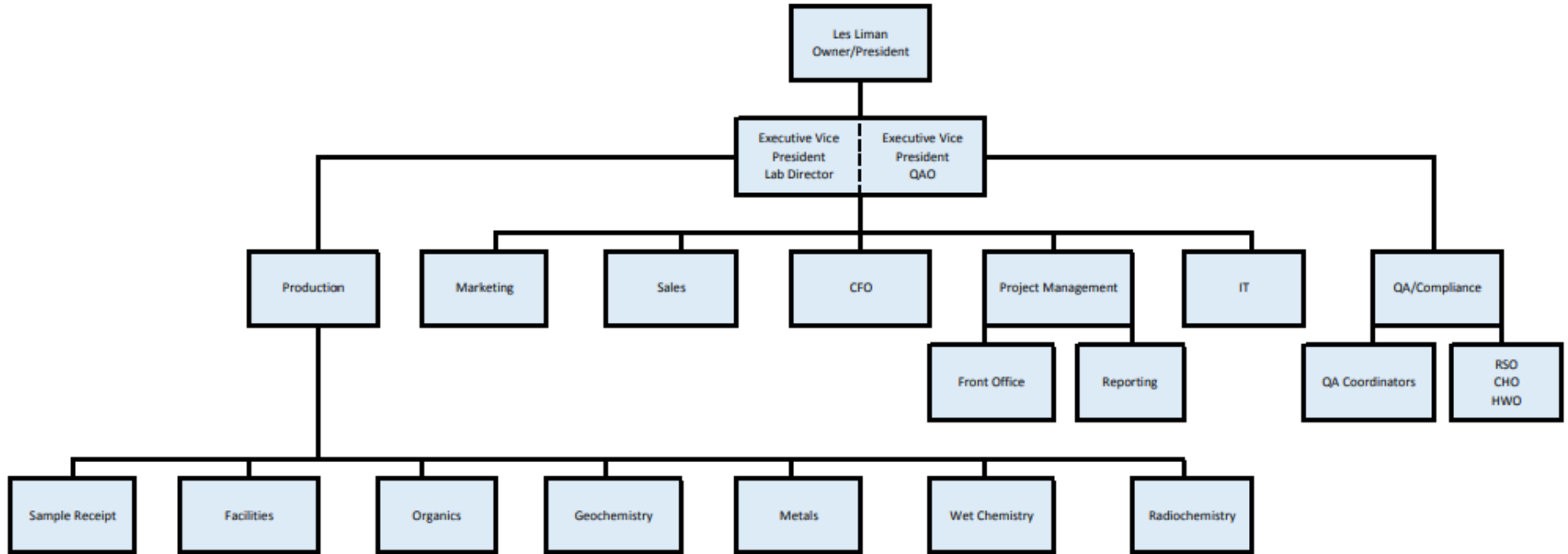
Tribal Experience:

- Natural Resource Damage Assessments (NRDA) plant, biota tissue and soils analysis
- Abandoned Mine Land (AML) site investigations
- Ecological Risk Assessments
- Ground and Surface water monitoring support
- Wastewater Treatment support, NPDS and sludge analysis

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