



— BUREAU OF —
RECLAMATION

**Solutions for Your Water and
Related Resource Challenges**

Technical Service Center

The mission of the Technical Service Center (TSC) is to be the Bureau of Reclamation's preferred provider of science and engineering services, and to be the preferred employer of engineers and scientists in the United States. The Technical Service Center values are founded on personal and professional integrity.



Civil Engineering

Concrete Dams, Spillways, and Outlet Works – structural and hydraulic analysis, evaluation, and designs

Flood Hydrology and Meteorology – extreme precipitation and flood studies, statistical hydrological analyses, flood inundation mapping, analysis and forecasting of runoff, precipitation, and climatic variability

Plant Structures – design of powerplants, pumping plants, switchyards, water treatment facilities, and other complex structures

River Hydraulics and Geomorphology – 2D and 3D hydraulic modeling and field studies for river restoration and erosion control

Sedimentation – surveys and modeling for reservoir operations, river scour, augmentation, intakes, and environmental compliance

Structural Analysis – seismic analysis of buildings and static and dynamic structural analysis for concrete dams and appurtenant structures, powerplants, and pumping plants



Water Conveyance – design and analysis of large fish facilities, irrigation and power canals, pipelines, tunnels, and diversion structures

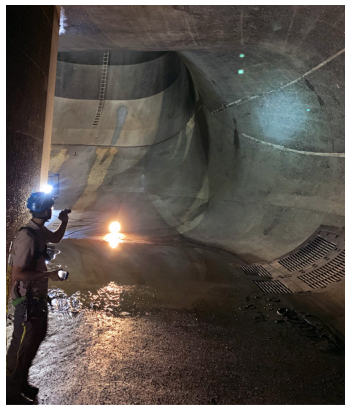
Water Treatment – design and evaluation of water and wastewater treatment processes and research of advanced water treatment technologies

Construction and Design Support

Construction Management – construction schedules, submittal and RFI response and Contract Modification coordination, claims analysis, inspection and construction support, constructability reviews, earned value analyses

Cost Estimating – preparation and review all levels of construction cost estimates (planning through construction), related life-cycle cost estimates, and performing cost risk analyses associated with heavy civil projects, large mechanical and electrical power generation equipment, and other water conveyance and storage related projects. Prepare quarterly Construction Cost Trends (Indexes) for Reclamation features and projects.

Specifications – preparation of project-specific specifications for all design functions and maintenance of agency guide specifications



Safety of Dams Engineering

Evaluations – evaluations, risk analysis, modifications, performance criteria, and emergency response

Facility Inspections – onsite dam safety inspections and inspections of normally inaccessible features including staff certified in Rope Access (SPRAT) and SCUBA dive techniques

Hazard Analysis – probabilistic hazard analysis for dam safety and design activities

Environmental Services

Environmental Applications and Research

– utilization of integrated pest management to control invasive species and promote ecological restoration through research, field sampling, and laboratory analyses while protecting sensitive species and aiding revegetation



Fisheries and Wildlife Resources – investigations and analysis to reduce impacts and to sustain and improve aquatic and terrestrial wildlife communities associated with Reclamation's water development facilities and operations

Geotechnical Services

Dam Performance Monitoring – design and analysis of dam instrumentation, data analysis, and database maintenance for embankment and concrete dams



Embankment Dams and Geotechnical Engineering

– static and dynamic analysis, design, dewatering and seepage analysis, evaluation for embankment dams, foundations for embankment and concrete dams, canals, underground excavations, and soil and rock slopes

Engineering Geology and Geophysics – integration of hydrologic, laboratory, instrumentation, 2D and 3D modeling, and field sampling and testing data to provide comprehensive foundation interpretations for construction foundation acceptance, investigations, and designs

Seismotectonics and Geomorphology – seismic monitoring of facilities, earthquake loadings, ground motions, response spectra, site characterizations, structural damage assessments, paleoflood investigations, fault studies, fault time histories

Laboratory Services

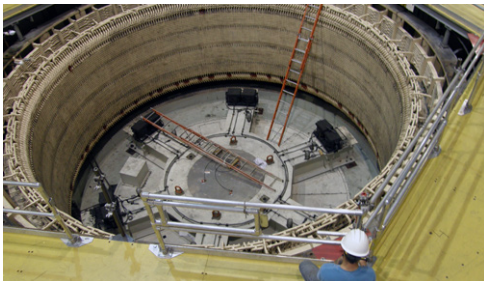
Hydraulic Investigations and Laboratory Services – hydraulic analysis, design, research, and testing through computational fluid dynamics modeling, field investigations, environmental hydraulics, and physical modeling

Materials Engineering – design, testing, and inspection of engineering materials and construction methods with focuses on concrete, structural steel, soil and rock, corrosion mitigation, geosynthetics, and composites; field-support of routine and unique maintenance/repair/replacement issues; world-class facilities and expertise for research, development, and implementation of cutting-edge water infrastructure engineering

Water Treatment – treatment and characterization of surface water, groundwater, wastewater, and seawater with the goal of reducing the cost and environmental impacts of water treatment through innovation

Mechanical Engineering

Hydraulic Equipment – design and analysis for pumps, turbines, governors, gates, valves, penstocks, manifolds, pressure vessels, and steel tanks



Mechanical Equipment – design and analysis for HVAC, plumbing, process piping, fire protection, selective withdrawal structures, stoplogs, hoists, cranes, trashracks, elevators, and fish handling equipment

On-site Services – field services for major hydraulic, mechanical equipment purchases, performance studies for acceptance of pumps and turbines, and factory inspections

Electrical Engineering

Electrical Systems – design and analysis for generators, switchyards, power transformers, circuit breakers, motor control centers, grounding and bonding, SCADA, excitation, digital governor, and electrical control systems

Hydroelectric Systems – analysis, condition assessment, consultation, troubleshooting, diagnostics, testing, commissioning, failure analysis, arc flash, optimization studies, protective relaying, machine condition monitoring and design rating reviews



Other Technical Services

Economics – policy support, impact and benefit-cost analysis, cost effectiveness analysis, cost allocation, and financial analysis related to water supply (irrigation and M&I), hydropower, recreation, fish and wildlife, water quality, salinity, and dam safety activities

Environmental Compliance – analysis and support for NEPA, ESA, and other laws

Geographic Information Systems (GIS) – development of spatial databases to provide information for scientific and engineering studies, create digital surface models from LiDAR, bathymetry, and ground surveys, provide modern cartographic and web-based mapping and spatial analysis solutions

Hazardous Materials – identification, site characterization and testing, and remediation specifications

Operation and Maintenance Support – testing, training, and safety programs for dams, powerplants, canals, and other structures

Remote Sensing – utilization of aerial photography and satellite imagery for photogrammetry, resource inventories, limnology, evapotranspiration, and habitat studies

Technical Training – Concrete and Concrete Repair Schools, Earth School, Corrosion School and Corrosion Webinar Series, and Canal Operation.

Unmanned Aerial Systems (UAS) – mission planning; execution of Reclamation-specific missions including those involving near-vertical, close-proximity, or GPS absent characteristics; development of automated procedures for data processing and the creation of derived products

Water Resources Supply and Demand Analysis – numerical simulation and impact analysis of river and reservoir operations, climate change, and water utilization/conservation

Writing, Editing, and Graphics – technical communication support for technical and nontechnical reports, brochures, newsletters, displays, posters, and digital presentations; PDF conversions; web site and multimedia creation



The TSC Advantage

World-class engineering, science, research, and support services for projects related to water resources, including dams and related infrastructure. Our staff of multidisciplinary professionals and technicians provides you with timely, cost-effective technical services addressing all engineering, environmental, and water resource matters.

TSC is a global leader in the development of new methods and state of the art for the analysis, design, and management of water resources. We use the latest current technology, innovative problem solving, and applied research to meet immediate and future needs. We have experts in all of the disciplines listed and have experience working in multidisciplinary teams. We also have contracting vehicles in place to obtain industry leading consultants if needed to supplement our resources.

The TSC is committed to producing the highest quality products possible in a cost effective and timely manner. We strive for excellence in every aspect of our business. We are here to serve you.

For more information about who we are, what we can do, billing arrangements, and contact information, please visit the TSC website: www.usbr.gov/tsc.

