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Surface Water Management

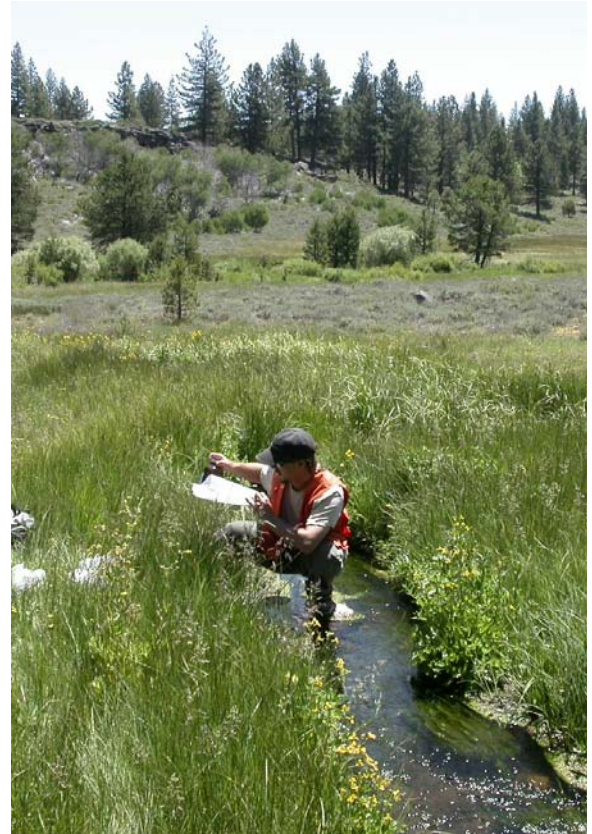
JBR Environmental Consultants, Inc. (JBR) provides a full range of water resource services for diverse projects in the West. We evaluate and solve water-related problems in both natural and altered systems. Whether the issue is protection of water quality, water supply, beneficial uses, management of effluent, or regulatory permit requirements, our clients value our commitment to developing innovative, workable, and cost-effective approaches to surface water management and water resource challenges.

Project Experience

City of Reno Chalk Creek Watershed Characterization & Treatment Wetland Pilot Project, NV

JBR is performing a watershed characterization of the Chalk Creek watershed in northwest Reno. Chalk Creek contributes elevated concentrations of total dissolved solids (TDS), nitrogen, and phosphorous to the Truckee River. JBR is identifying flow inputs to Chalk Creek and sources of TDS and nutrients, and is evaluating mitigation measures to improve geomorphology and reduce TDS and nutrient loading for the benefit of the nonpoint source reduction component of the Truckee River Total Maximum Daily Load. For the watershed characterization, JBR created a GIS database; conducted surface water, stormwater, and soil leachate sampling; and performed a geomorphic and riparian habitat assessment.

To mitigate erosion and enhance riparian habitat, JBR designed an erosion control structure with riparian and upland plantings and performed the associated permitting and construction contracting and observation. Additionally, JBR has been contracted by the City of Reno, with funding from the Truckee River Fund, to research, design, install, and monitor pilot-scale treatment wetlands to improve the water quality of Chalk Creek. The pilot treatment wetlands are anaerobic, subsurface, lined wetlands designed to decrease TDS through enhancement of sulfate-reducing bacteria. JBR performed the associated permitting and construction contracting and observation. The wetlands will be monitored for at least a year, with monitoring of influent and effluent, pore water using peepers, substrate chemistry and stratification, and hydrogen sulfide gas flux with a flux chamber.



Services

- Watershed analysis
- Stream surveys and classification
 - » Watershed modeling
 - » Hydrologic modeling
 - » Surface water and groundwater interaction
 - » Geomorphic assessment
 - » Hydraulic analysis
- Natural Resource Damage Assessments
- Sediment and erosion analysis
- Restoration
- Seep and spring surveys
- Surface water modeling

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Project Experience

Nevada Department of Transportation I-580 Extension Water Quality Study & BMP Effectiveness Study

Since 2003, JBR has been conducting water quality monitoring and studying Best Management Practice (BMP) effectiveness for the Nevada Department of Transportation (NDOT) on its \$440 million, 8-year I-580 Extension Project. NDOT has incorporated state-of-the-art engineering into the highway design in an effort to maintain and improve water quality. To determine any impacts to waters resulting from implementation of the project, JBR is performing baseline, interim, and post-construction water quality monitoring. This study includes a Baseline Water Quality Assessment; development and implementation of Sampling and Analysis Plans; weather monitoring and stormwater sampling; quarterly surface water monitoring; design, installation, and maintenance of near-continuous in situ turbidity probes; interpretation of water quality analyses related to construction activities; assessment of temporary BMP function during runoff events; and report writing.

City of Sparks Rock Park Whitewater Park Monitoring Plan & Implementation, NV

The City of Sparks has retained JBR for a five-year, intensive monitoring program for the newly constructed Rock Park Whitewater Park. In order to comply with conditions imposed by the regulatory agencies, JBR developed and is implementing the Monitoring and Reporting Program, which incorporates all sampling protocols for evaluating:

- fish passage,
- sediment transport,
- in-channel feature stability,
- flood flow performance,
- riparian vegetation,
- water quality,
- aquatic habitat, and
- benthic macroinvertebrates.

In order to best manage the data and analysis of the five-year program, our team will utilize MS Access, Excel, ArcGIS, HEC-RAS, and Flow 2D modeling software. Project highlights include Radio Frequency ID tagging and tracking of over 150 resident Truckee River fish per year; calibration of hydraulic model parameters with measured velocities and roughness coefficients; underwater photometric substrate monitoring techniques; and velocity measurements to develop rated sections for each park feature (drop structure). Reporting will include coordination and report approval requirements from the US Fish and Wildlife Service, the Nevada Division of Wildlife, the US Army Corps of Engineers, the Nevada Division of Environmental Protection, and the Nevada State Engineer. JBR will provide annual reports and presentations to the City of Sparks and other agencies in partnership with Summit Engineering.

JBR Expertise

Stormwater

- NPDES Phase I and Phase II permit applications
- Storm Water Pollution Prevention Plans
- Compliance monitoring
- BMP design and implementation
- Discharge monitoring
- Automated sampler design and deployment

Surface Water & Wetlands

- Waters of the US delineations
- CWA Section 404 permitting
- Wetland design
- Function assessment
- Water quality indicators
- Soil and plant chemical uptake analysis

Water Quality

- Total Maximum Daily Load
- Irrigation feasibility
- Effluent Management Plans
- Water/soil interaction
- Monitoring Plans and Quality Assurance Plans
- Remote monitoring and telemetry
- Impacts from roads, construction, industrial developments, agriculture, mining, and timber harvesting

