## WATER & ECOLOGY

## Environmental Studies and Permitting Services For All Mining Project Phases







CANADA

Mining projects may require environmental services throughout the life cycle. The environmental experts at Minnow and Ecofish provide targeted support where and when you need it most.

Conceptual Design  PFS, FS,  Detailed Design	EA & Permit	Permit Review &	Pre-Construction,	Operations & Adaptive	Closure / Post-Closure &
	Application Preparation	Approval Support	Construction	Management	Long-term Monitoring
Environmental Data Gap Analysis Environmental Baseline Monitoring Program Design Environmental Constraints Identification Fatal Flaw Analysis — Environmental Aspects Project Infrastructure Configuration Assistance  Fatal Flaw Analysis — Environmental Aspects Project Infrastructure Configuration Assistance  Existing Condition Studies:  Geochemistry  Surface Water Quality  Groundwater Quality  Surface Water Hydrology  Groundwater Flow  Sediment Quality  Aquatic Life (e.g., Benthics, Fish, Fish Habitat)  Terrestrial Ecosystems  Wildlife  Air Quality/Climate/GHG  Noise/Vibration  Predictive Modeling, such as:  Site-Wide Water Balances, Water Quality, & Mass Balance Modeling (GoldSim, PHREEQC)  Mixing Evaluation/ Hydrodynamic/Plume Modeling (CE-QUAL-W2, CORMIX)  Contaminant Transport Modeling	Overall Multi-Disciplinary     Environmental Assessment     & Permit Application     Coordination, Compilation     & Submission     Technical Environmental     Assessment / Permit     Application Contributions:	Technical Advisory Committee/ Working Group Meeting Technical Presentations Issues Tracking & Responses to Indigenous/Regulator Comments & Information Requests Review & Advise on Draft Permit Conditions Regulator Negotiations for Achievable Site-Specific Effluent Limits &/or Permit Conditions Expert Witness Testimony, & Other Technical Expert Support for Public Hearings	Construction Environmental Management Plan Development Site-Specific Mitigation & Constraints Mapping Pre-Construction Surveys, 7 Fish/Amphibian Relocation/Salvage Field-Based Construction Environmental Monitoring Overall Environmental Management System Strategy & Support Management Plan Development: Water Management Erosion & Sediment Control Fish & Fish Habitat Management Terrestrial Ecosystems & Wildlife Management Wetlands Management Wetlands Management Fish (Aquatic Habitat) Offsetting Plan Development Compliance Monitoring & Reporting	Performance Monitoring & Reporting Data Management, Statistical Evaluation, Interpretation Ongoing Compliance Advice Environmental Effects Monitoring (EEM) &/or Aquatic Effects Monitoring Program (AEMP) Design, Field Studies, Reporting Site-Specific Effects & Mitigation Studies Effluent/Seepage Dispersion Evaluations Sediment Chemistry Solid-Phase Speciation Porewater Chemistry Metal/Cyanide/Nutrient Mobility Sediment Deposition Contaminant Flux, Fate, Transport Toxicity Evaluations Investigation of Cause (IOC) Studies Cumulative Effects Monitoring Training Monitoring Program Designs Permit Renewal & Amendments	Closure/Reclamation Plannin Mitigative Design, Costing Closure/Post-Closure Monitoring & Reporting Long-Term Monitoring Plan Development & Implementation: Water Quality Aquatic Life (e.g., Benthics Fish, Fish Habitat) Terrestrial Ecosystems & Wildlife Fish (Aquatic Habitat) Offsetting Plan Data Management, Trend Analysis, Interpretation

Our environmental assessment and permitting team has extensive experience in identifying regulatory requirements and key issues early on in the mine life-cycle to support a regulatory strategy to manage both the cost and the timing of permitting processes.