



# WATER AND WASTEWATER **SYSTEM SERVICES** DESIGN/BUILD & OPERATE



Water and wastewater management is a primary business of ASI Group Ltd. (ASI). The company has practical experience in design/build/operating small and large water and wastewater treatment systems for industrial and Institutional applications. ASI has technical, engineering and administration support in-house to design, construct, fabricate, project manage, install, calibrate and operate systems throughout Ontario. Since 1989, ASI has been providing permanent and turnkey skid mounted chemical dosing systems to over 50 industries, utilities, and private water providers annually. These systems include projects where flow rates range from 10 m<sup>3</sup>/day to 3500 m<sup>3</sup>/day.



ASI was founded in 1987 as Aquatic Sciences Inc. by a team of technical professionals committed to providing public and private water and wastewater systems with integrated services; from preliminary environmental impact surveys or needs assessment, through design and construction, and continuing with project management, contract plant operations, inspections and repair.



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# WATER & WASTEWATER

## DESIGN / BUILD

### ASI GROUP

## WATER SERVICES

Design/Build, Management, Operations and Maintenance (O&M) of water and wastewater treatment systems are core activities of ASI Group Engineering Services.

The Recent Ontario Drinking Water Protection Regulations O. Reg.459/00 and O. Reg.505/00 have impacted large and small water treatment facilities with many strict requirements including licensed operators. ASI provides complete O&M services for both water and wastewater treatment facilities, using operators with dual licensing to expedite efficiencies. O&M services also include full responsibility for compliance reporting, obtaining approvals and communication with regulatory bodies. Essentially, ASI acts as a utility service provider for our clients.

ASI staffs Professional Engineers that provide clients with current updates on the new drinking water and wastewater regulations. Clients are alerted to new requirements as they become tabled prior to legislation implementation. ASI is actively tracking the progress of the new (first reading) Proposed Safe Drinking Water Act 2002 which will supplement the existing Drinking Water regulations. ASI has participated in the written and verbal comment process during the government's development of the new Act that contains several changes to the current regulations that will impact operational requirements of water treatment plants.



### LABOUR FOR ROUTINE

## O&M ACTIVITIES

ASI provides licensed water and sewage treatment operators located in regional proximity to our respective projects. We staff Niagara projects with local operators to minimize response time in the event of emergency call-outs. Regional operations in the Sarnia region are staffed similarly.

Operators are responsible for routine maintenance of equipment; instrument calibration; chemical deliveries; process control, sampling of raw/treated/distribution system water; and notifying the ASI Project Manager of any adverse water quality incidents or areas of operational concern.

ASI operators are equipped with pagers to respond to alarms 24 hrs/day 7 days/week. Typical alarms on a groundwater system include pump failure, low and high outlet free chlorine residual, and turbidity.

### PROJECT MANAGEMENT &

## ENGINEERING SUPPORT

ASI's philosophy is to ensure a successful operations project by providing key technical and administrative support to the operators. Our very successful approach is to let the operators do their job, while supplying all necessary administrative and technical matters through in-house support.

ASI's approach has been successful through the support provided by dedicated administrative and technical support. A Professional Engineer is assigned to every project to ensure proper operating, and health and safety procedures are followed. The Engineer produces an O&M manual for each site, provides technical support to the operator as required, ensure all procedures in current and future regulations are followed, and monitors project costs. Most importantly, the Engineer/Project Manager is readily accessible to the client.

# R SYSTEM SERVICES

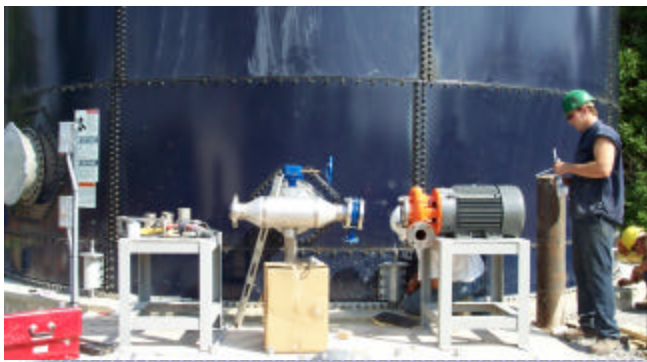
## & OPERATE

## SAMPLING AND LABORATORY ANALYSIS

ASI staff are licensed to collect treated water samples; use portable equipment to verify free chlorine residual and other parameters in the water distribution; and to verify the accuracy of the on-site instrumentation. ASI retains accredited laboratories to carry out weekly bacteria analysis and quarterly analysis.

## CHEMICALS

ASI will assume responsibility for purchasing, receiving and supplying required chemicals on behalf of the client. Chemical usage varies per site, however, in groundwater systems typically sodium hypochlorite is the only chemical utilized whereas for surface water systems, a flocculent/polymer is often required.



## MAJOR MAINTENANCE

A Reserve Budget should be identified and allocated for anticipated major maintenance activities including major repairs, equipment overhaul or replacement. ASI establishes a Minor Maintenance Budget for routine maintenance and parts replacement which typically includes:

### Spare Parts

- Liquid ends for chemical dosing pumps
- Free Chlorine sensors, membrane caps, electrolyte
- Turbidity meter lamps, and photo cells
- Miscellaneous valves, tubing and fittings

### Maintenance

- Monthly cleaning and calibration
- Annual water meter flushing and calibration

## DESIGN/BUILD

ASI conducts engineering assessments and design/build operations of water systems and recommends upgrades that are necessary to meet drinking water regulations. Following any assessment ASI will carry the improvements through to finalizing design, obtaining the necessary approvals, purchase of the necessary equipment and installation of the equipment. At minimum, typical upgrades to ground water treatment systems follow:

- Supply and installation of chlorination panels complete with backup pump. Panels are fabricated and assembled at ASI's offices.
- Installation of a chlorine residual analyzer (free or total) to monitor treated water residual before water enters the distribution system. The analyzer is typically pre-set with low and high residual alarm relays.
- Turbidity analyzer with pre-set alarm setpoints (high, high high) as needed depending on water conditions.
- Water meter(s) to monitor daily and total water usage, with signal output (periodically MOE will require a raw and a treated water meter to monitor compliance with Permits to Take Water).
- Paper or paperless chart recorder(s) for monitoring and archiving required parameters, such as free chlorine, turbidity, flow, total flow, etc.
- Autodialler to monitor free residual alarms and chemical feed pump failure. The autodialler will page ASI operators when under an alarm condition. A land telephone line is typically required, but a cellular autodialler is an option.
- Optional Ethernet connection to reduce on-site visits for data acquisition, and allow for real time data monitoring from home or office.
- Contact tank or chamber for increased disinfection requirements. The new water regulations have strict requirements for Chlorine Contact time. ASI will assess the existing contact time and determine the need to increase contact time.

ASI also conducts engineering assessments and design/build operations of surface water systems and recommends upgrades that are necessary to meet regulations. The instruments and unit operations required are slightly different, while monitoring requirements are more stringent with increased emphasis on assuring the safety of the treated water supplied to users of the systems.

# WATER AND WASTEWATER SYSTEM SERVICES

## Wastewater Treatment Systems

- Conventional and advanced treatment system design
- Pretreatment of sewer discharges
- Treatment of contaminated groundwater
- Landfill leachate treatment and collection
- Effluent characterization and treatability studies
- In-house accredited laboratory support
- Process optimization and plant audits
- Wastewater minimization strategies
- Sludge and other residuals management
- Plant commissioning and operator training
- Trunk Mains/Pumping Stations
- SCADA Systems
- Compliance applications and amendment support (permit applications, Certificate of Approvals)
- Stormwater Management Modeling and Design
- Erosion and Sediment Control

## Stormwater Management

- Stormwater Management Modeling and Design
- Urban, Rural, and Agricultural Drainage
- Erosion and Sediment Control
- Channel Naturalization

## Sewage Systems

- Municipal and Private Sanitary Sewers
- Inflow and Infiltration Studies
- Sewage Treatment Plants and Pumping Stations

## Water Treatment Systems

- Engineering Assessments for Regulation Compliance
- Treatment Equipment Technology Evaluation
- Design and Approvals
- Residuals Management
- Source Water Protection
- Treatment Plant Optimization
- Plant Audits
- SCADA Systems
- Instrumentation
- Equipment Supply and Installation
- Plant Commissioning and Operator Training

## Treatment Plant Operations

- Licensed operators
- 24/7 emergency response
- Sampling and analysis
- Correspondence management with regulatory bodies and public notification
- Supply of chemicals
- Treatment plant optimization
- Equipment maintenance, installment and calibration

## Water Supply and Distribution

- Master Planning (supply, storage, distribution)
- Storage Systems (elevated and inground)
- Trunk Mains/Booster Pumping Stations
- Water Distribution Studies
- Leak Detection Studies



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