

WATER TECH 2010

BANFF, ALBERTA, CANADA

COMPACT WASTEWATER TREATMENT SYSTEM FOR DOMESTIC AND COMMERCIAL OPERATIONS SYSTEM DESIGN AND FIELD EXPERIENCE

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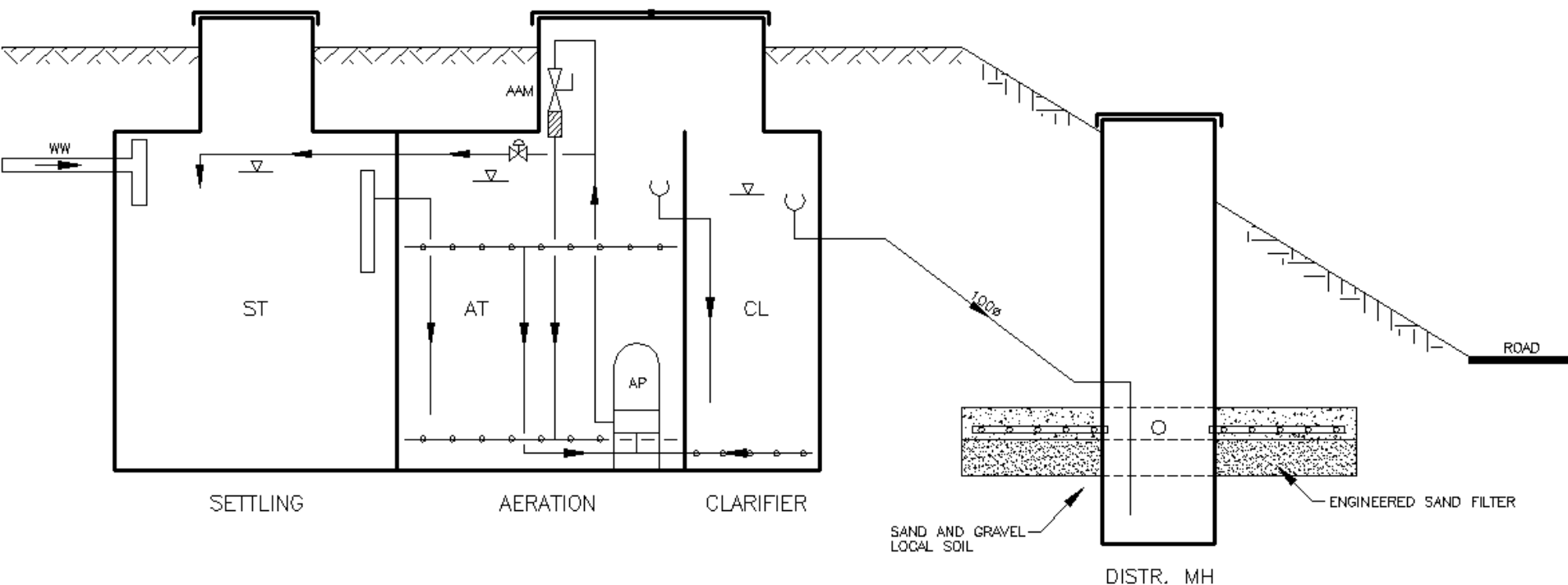
J.K. Engineering Ltd.

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INTRODUCTION

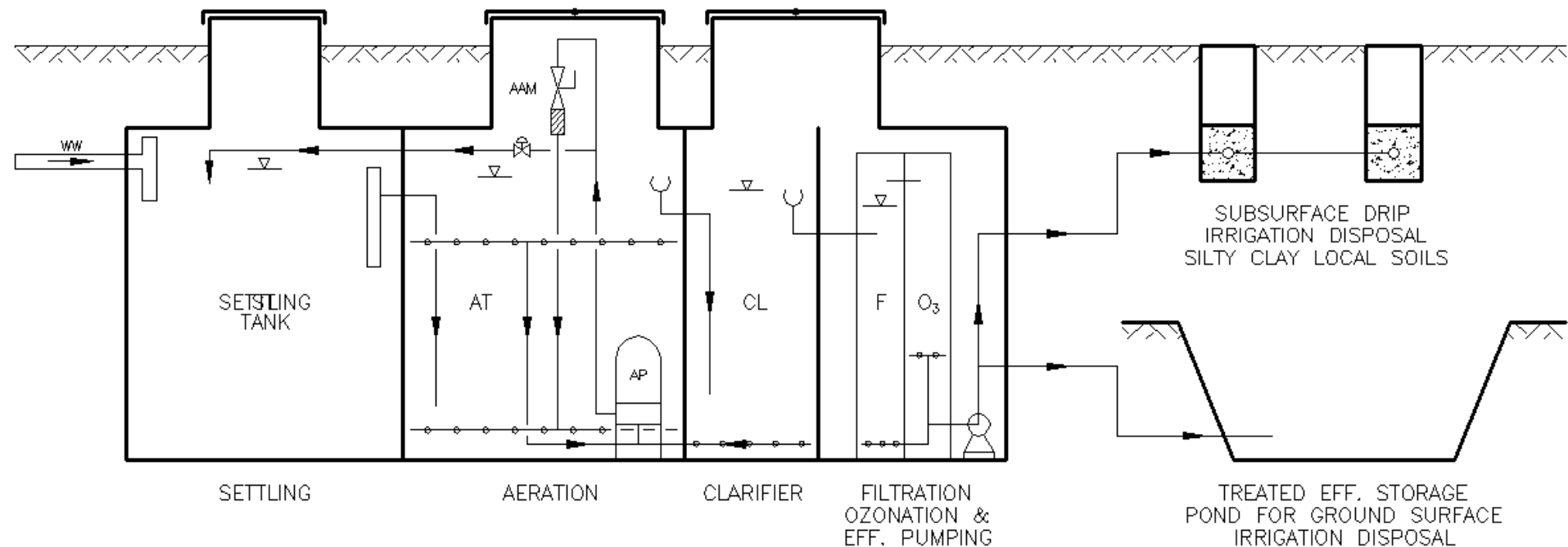
- J.K. BACKGROUND
- AREAS OF CONSULTING SERVICES
 - Water Supply
 - Wastewater Disposal
 - Storm Drainage Management
 - Groundwater Development
 - Land Development
- SCOPE OF CONSULTING SERVICES
 - Preliminary Investigations
 - Feasibility Studies
 - Detailed Design
 - Construction Services
 - Post-Construction Services
- EQUIPMENT SUPPLY
 - Water Treatment Package Systems
 - Wastewater Treatment Package Systems
 - Water Well Operation Monitoring
- APPLIED RESEARCH AND DEVELOPMENT
 - Water Treatment Systems
 - Wastewater Treatment systems
 - Water Well Monitoring Systems

FIG. 1 – SINGLE RESIDENCE WASTEWATER TREATMENT AND DISPOSAL
THROUGH ENGINEERED SAND FILTER



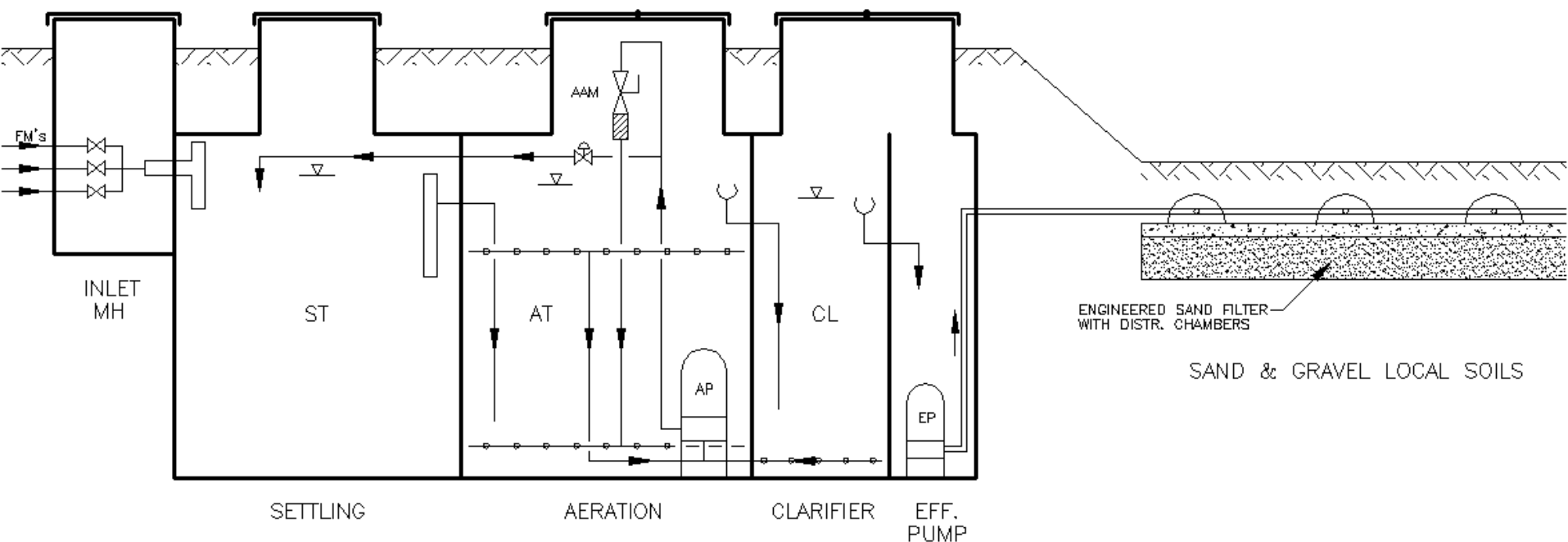
- TREATMENT SYSTEM – SECONDARY, TREATMENT, ACTIVATED SLUDGE PROCESS
- EFFLUENT DISPOSAL – UNDERGROUND THROUGH ENGINEERED SAND FILTER
- SYSTEM CAPACITY – 2–3 m³/DAY
- SYSTEM CONSTRUCTION – PRE-CAST U/G CONCRETE TANKS
- AAM – USA & CANADIAN PATENTS
- TREATMENT PROCESS – PATENTS PENDING

FIG. 2 – DOMESTIC WASTEWATER TREATMENT AND DISPOSAL THROUGH
SUBSURFACE DRIP IRRIGATION OR SURFACE GROUND IRRIGATION



- TREATMENT SYSTEM – ACTIVATED SLUDGE PROCESS – SECONDARY TREATMENT C/W FILTRATION AND DISINFECTION WITH OZONE (FUTURE)
- EFFLUENT DISPOSAL – SUBSURFACE DRIP IRRIGATION
– STORAGE POND & SURFACE GROUND IRRIGATION (FUTURE)
- SYSTEM CAPACITY – 2–3 m³/DAY
- SYSTEM CONSTRUCTION – PRE-CAST U/G CONCRETE TANKS
- AAM – USA & CANADIAN PATENTS
- TREATMENT PROCESS – PATENTS PENDING

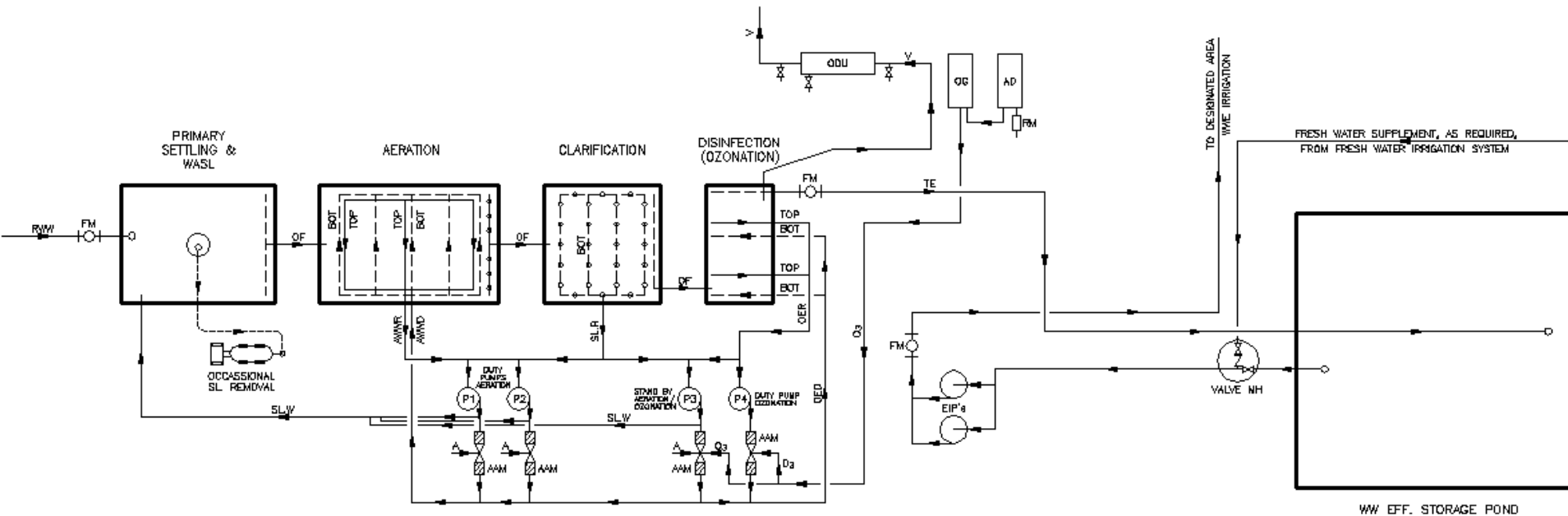
FIG. 3 – CAMPGROUND WASTEWATER TREATMENT AND DISPOSAL THROUGH
ENGINEERED MOUND FIELD



- TREATMENT SYSTEM – ACTIVATED SLUDGE PROCESS – SECONDARY TREATMENT
- EFFLUENT DISPOSAL – ENGINEERED MOUND FIELD
- SYSTEM CAPACITY – 35 m³/DAY
- SYSTEM CONSTRUCTION – PRE-CAST U/G CONCRETE TANKS
- AAM – USA & CANADIAN PATENTS
- TREATMENT PROCESS – PATENTS PENDING

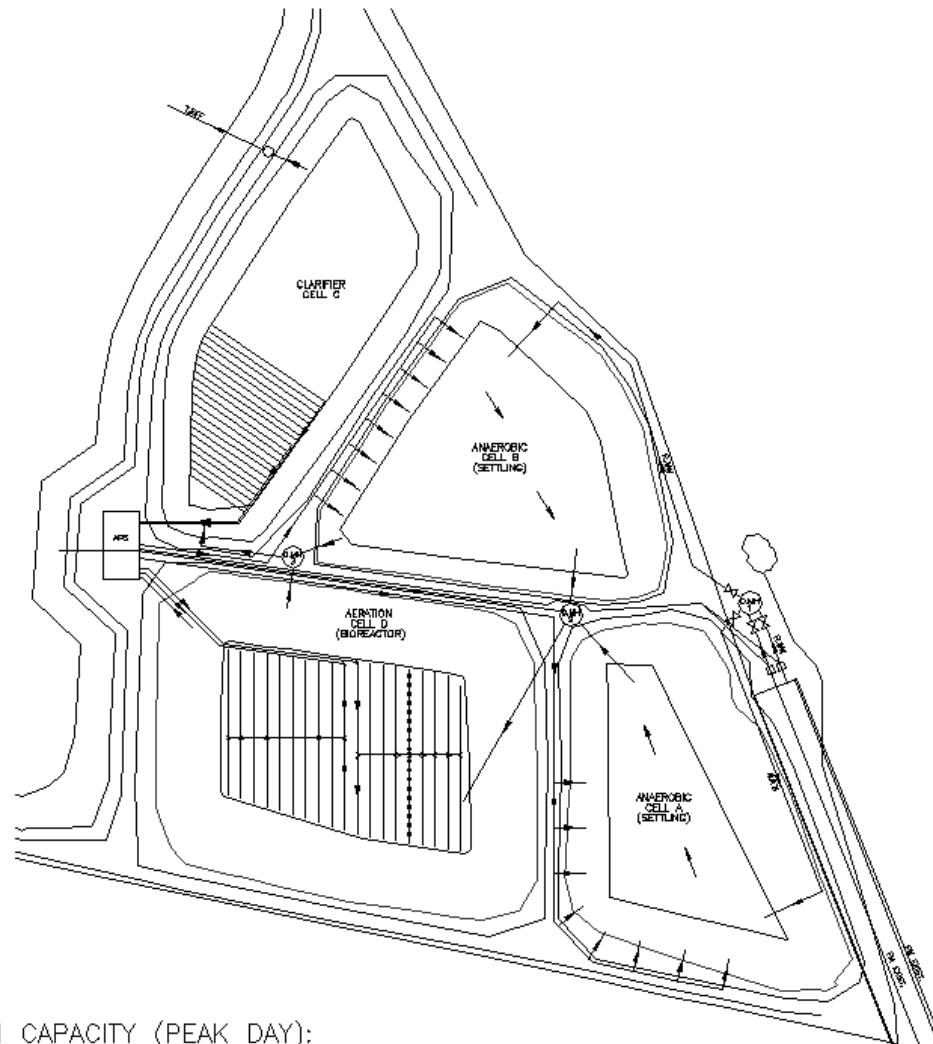


FIG. 4 – GOLF COURSE WASTEWATER TREATMENT & DISPOSAL THROUGH SURFACE GROUND IRRIGATION



- TREATMENT SYSTEM – ACTIVATED SLUDGE PROCESS – SECONDARY TREATMENT WITH OZONE DISINFECTION
- TREATMENT DISPOSAL – GROUND SPRAY IRRIGATION
- SYSTEM CAPACITY – 54 m³/DAY
- SYSTEM CONSTRUCTION – PRE-CAST A/G CONCRETE TANKS
- AAM – USA & CANADIAN PATENTS
- TREATMENT PROCESS – PATENTS PENDING

FIG. 5 – MUNICIPAL CONVENTIONAL LAGOON WASTEWATER TREATMENT
CONVERSION TO ACTIVATED SLUDGE TREATMENT PROCESS
SECONDARY TREATMENT



- SYSTEM CAPACITY (PEAK DAY):
 - PRESENT – 4800 m³/D
 - DESIGN – 9600 m³/D
- AERATION SYSTEM – AIR ASPIRATOR MIXED (AAM) AND WASTEWATER EFFLUENT PUMP
- AAM – USA & CANADIAN PATENTS
- TREATMENT PROCESS – PATENTS PENDING

COMPACT WASTEWATER TREATMENT SYSTEM FOR DOMESTIC AND COMMERCIAL OPERATIONS SYSTEM DESIGN AND FIELD EXPERIENCE

TREATMENT SYSTEM SPECIFIC FEATURES:

- LOW MAINTENANCE, NO FILTERS TO CLEAN OR INSPECT
- FLEXIBILITY IN OPERATION:
 - CONTINUOUS AERATION (HIGH TREATMENT LEVEL)
 - INTERMITTENT AERATION:
 - REGULAR OPERATION (REGULAR TREATMENT LEVEL)
 - VACATION OPERATION (LIGHT TREATMENT / IDLE LEVEL)
- WIDE RANGE OF TREATMENT LEVEL:
 - SECONDARY TREATMENT
 - SECONDARY TREATMENT WITH FILTRATION AND/OR DISINFECTION
 - TERTIARY TREATMENT
 - TERTIARY TREATMENT WITH FILTRATION AND/OR DISINFECTION
- TREATMENT LEVEL DESIGNED TO REQUIREMENTS OF LOCAL JURISDICTION AND OWNER NEEDS
- TWO ESSENTIAL COMPONENTS:
 - AERATION / RECIRCULATION PUMP, 1 TO 2 HP, SUBMERSIBLE OR DRY INSTALLATION
 - AIR ASPIRATOR MIXER (AIR COMPRESSOR NOT REQ'D)
- FULLY AUTOMATIC OPERATION, PLC CONTROLLED WITH ALARMS, LWL & PUMP FAILURE
- UNDERGROUND OR ABOVE GROUND INSTALLATION
- CONSTRUCTION:
 - LOCALLY AVAILABLE PRE-CAST CONCRETE TANKS
 - LOCALLY AVAILABLE PLASTIC TANKS (RFG, PE)