

**SIEGMUND ENVIRONMENTAL SERVICES, INC  
INTRODUCES  
THE SINGULAIR WASTEWATER TREATMENT SYSTEM**

**A. PRODUCT BACKGROUND**

The SINGULAIR wastewater treatment system is designed to treat domestic sewage for individual homes, clusters of homes or commercial developments. The system was patented in the late 1970's, improved over the years and the most advanced model is the recently introduced Model 960 Bio-Kinetic. The system received Class 1, Standard 40 certification by the National Sanitation Foundation International after an exhaustive testing program. The SINGULAIR is approved in most of the states in the United States and received nation-wide approvals in many foreign countries.

**THE MODEL 960 WAS CERTIFIED TO HAVE DEMONSTRATED THE FOLLOWING EFFLUENT QUALITY: BOD 6 MG/L, SS 10 MG/L.  
THE EFFICIENCY IN TKN REMOVAL IS 85%.**

The SINGULAIR is constructed of 5,000 psi reinforced concrete. The tank is delivered to the project site ready for installation, similar to the septic tank it replaces.

**B. PROCESS DESCRIPTION**

The SINGULAIR utilizes the extended aeration method of wastewater treatment to achieve the level of treatment demonstrated by the NSF International Certification. The treatment process takes place in the three-compartment precast concrete tank. The first compartment is an anaerobic pretreatment chamber, the second is the aeration chamber and the third is the settling and filtration chamber.

**1. Pretreatment Chamber**

The first chamber acts as an anaerobic settling area for the incoming wastewater stream. In this chamber the heavy solids settle and the anaerobic decomposition process preconditions the wastewater during its approximately 12 hours of residence. The outlet of the pretreatment chamber is equipped with

a cast-in-place Tee that extends vertically into the liquid so that only the preconditioned and equalized flow from mid-height in the chamber is displaced into the next compartment. The Tee and the submerged transfer port are sized to handle the peak flows without high velocities that would transfer settled solids. A removable inspection cover is placed at the top of the pretreatment chamber to allow the inspection of the depth of settled solids and the precast Tee.

## **2. Aeration Chamber**

The aeration chamber provides in excess of twenty-four hours of detention time during which the wastewater is aerated. Aeration is performed via the action of the aerator motor and an aspirator shaft which draws the air into the water. A cast-in vent cap in the access riser's cover allows air to flow freely into the chamber. The aeration system is of sufficient size to provide a minimum of 5 cubic meter of air per kilogram of BOD. The aeration chamber's length-width-depth ratio is designed to ensure uniform mixing for optimal treatment.

## **3. Final clarification chamber**

The clarifier is designed to provide satisfactory settling and clarification for the aerated wastewater. In the inlet zone at the bottom of the chamber all transfer turbulence is dissipated and the liquid is hydraulically displaced in an upward direction. In the mid-zone of the chamber settling takes place and the solids deposit on the slanted sides of the hopper and slide down to the inlet zone where the turbulence returns it to the aeration chamber for further processing. This recirculation of the activated sludge is further enhanced by the Bio-Static sludge return located in the clarification chamber.

The clarified liquid is contained in the final settling zone at the top where it enters the filtration system through the flow equalizer ports.

## **4. Bio-Kinetic filter**

The Bio-Kinetic filter is located totally within the clarification chamber but the flow equalizing ports are within the final settling zone. The filter provides flow equalization, filtration, optional chlorination and dechlorination and final settling to ensure acceptable effluent quality. The assembly consists of the

following elements: a micronically woven filter fabric, baffled perimeter settling zone, flow equalization ports, flow deck, level indicator and adjustment lugs, optional chlorine tablet feed tube, contact basin, thirty-seven baffled chamber settling plates, effluent stilling well, discharge weir, optional dechlorination tablet feed tube and the outlet connection.

All components are manufactured with inert synthetic materials or corrosion resistant stainless steel, assembled into the cylindrical filter and connected to a plastic outlet coupling cast into the tank.

The optional chlorine tablet feed tube is totally inside the filter housing making contact with water outside the filter impossible. The incoming clarified liquid makes contact with the lowest tablet in the tube and the tablet slowly dissolves and provides the disinfection necessary during a minimum of twenty minute mixing time. In a similar fashion, the chlorinated liquid contacts the dechlorinating tablet in the second feed tube prior to discharge to remove the residual chlorine in the water.

## **5. Mechanical aerator**

The air and the mixing needed during the treatment process is provided by the aerator. It is installed in the concrete riser at the center of the aeration chamber. The aerator motor is supplied with plated mounting brackets, moisture resistant electrical connector, foam deflector and a stainless steel aspirator shaft with a plastic aspirator. Only the aspirator and the lower portion of the shaft is in contact with the wastewater. There are no other submerged components such as pumps, motors, bearings or air piping. The motor is a single phase 1/6 HP, 115V, 60 Hz unit operating at 1,720 RPM. Operation time is adjustable but the NSFI certification is with a 50% running time (30 minutes of every hour).

## **6. Electrical control panel**

Aerator controls are mounted in a weather-tight plastic enclosure for protection. Included are: manual reset circuit breaker, on-off-automatic selector switch, adjustable timer mechanism and an audible/visual warning system to report malfunction.

## **7. Capacities**

The SINGULAIR Model 960 is available in a number of treatment volume capacities. The various models may be used individually or in parallel format to provide treatment to larger volumes of wastewater.

<b>Model</b>	<b>Capacity</b>	<b>Capacity</b>	<b>Width</b>	<b>Length</b>	<b>Depth</b>
960/N	1.9 M3	500 gal.	168 cm 5'-6"	282 cm 9'-3"	183 cm 6'-0"
960/2.8	2.8 M3	750 gal.	168 cm 5'-6"	282 cm 9'-3"	213 cm 7'-0"
960/3.8	3.8 M3	1,000 gal	168 cm 5'-6"	282 cm 9'-3"	183 cm 6'-0"
960/4.7	4.7 M3	1,250 gal	168 cm 5'-6"	282 cm 9'-3"	213 cm 7'-0"
960/5.7	5.7 M3	1,500 gal	168 cm 5'-6"	282 cm 9'-3"	244 cm 8'-0"

The SINGULAIR wastewater treatment system is locally built, sold and serviced. For further information please contact:

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Affiliated offices in the West Indies, Russia, Hungary, Slovakia and Yugoslavia.

## **C. CONSTRUCTION INFORMATION**

In appearance and from the transportation or setting viewpoint the Singulair is very similar to a standard septic tank.

Detailed installation instructions are provided with each purchase and the assistance of Siegmund Environmental Services, Inc. Is available at no additional cost to the owner.

### **1. Transportation.**

The Singulair is transported to the site on a boom truck. Generally the top and bottom castings are already assembled and sealed, requiring minimum on-site work.

### **2. Setting.**

The Singulair is generally set by the driver of the boom truck into the excavation prepared by the installer of the entire septic system. The excavation must be properly prepared to the right grade: the bottom should be level with a minimum of 6 inches of compacted gravel or crushed stone. The excavation must also be accessible for the boom truck to set the tank.

### **3. Electricity.**

It is the responsibility of the installer to wire the controller and to provide a dedicated 15 A circuit. Detailed placement instructions and wiring diagram is supplied with each controller.

### **4. Installation of mechanical components.**

The mechanical components, the aerator and the filter, are installed by authorized representatives of Siegmund Environmental Services, Inc. after all plumbing and piping is in place and the tank is filled with water. The installation of the equipment is also the start-up procedure as the system is completed and ready to treat the domestic wastewater.

## **D. OPERATION AND MAINTENANCE**

With the purchase of a Singulair the owner is provided with a **2-year** free maintenance and inspection service contract. During the 24 months after the installation of the mechanical components authorized representatives of Siegmund Environmental Services, Inc. visit the installation to check its performance and to perform the prescribed service. The visits are in 6 month intervals unless local or state requirements dictate otherwise.

Continuation of the service contract is available for each installation for a yearly fee.

A detailed Owner's Manual and a copy of the 50-year warranty policy is also provided with each purchase to familiarize the home owner with the operation of the Singulair. In essence, the home owner only needs to observe some simple instructions (such as the use of cleaning chemicals) to assure that the Singulair operate at the expected performance level.

## **E. MISCELLANEOUS INFORMATION**

### **1. Permitting.**

The Singulair has received permits in a large number of states, including Massachusetts, Rhode Island, New Hampshire, New York, Florida, Ohio, etc., about 35 in total. In addition the Singulair is an approved product in several foreign countries including Canada.

### **2. Delivery time.**

In general the 500 gallons per day system is in stock and can be shipped in a few days after the order is received. Larger capacity systems are constructed to order and require some lead time.

### **3. Costs.**

For pricing and delivery information please call our office.

### **4. Effluent disposal.**

The disposal of the effluent must be in accordance with local or state requirements. In New England the effluent must be disposed of underground, utilizing some approved infiltration device. In several states leachfield reduction is permitted with the use of the Singulair.

### **5. Disinfection.**

Disinfection is required only for surface disposal or disposal into storm drain systems. Since these are not allowed in New England, the optional disinfection system is activated locally only by special request.

### **6. System applicability.**

The Singulair wastewater treatment system can be used for single family homes, for multi-family buildings, for clustered residential units or for commercial establishments.

Singulairs have been installed for motels, restaurants, shopping centers, group homes and similar in addition to residential use. The limiting factor is primarily the quality of raw sewage: influent must be of domestic wastewater quality, appropriate for treatment by extended aeration.

## **7. Additional information.**

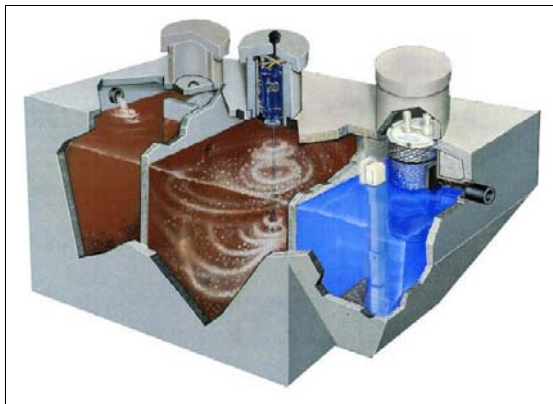
Design assistance and additional information on the Singulair wastewater treatment system is available from Siegmund Environmental Services, Inc. Our address, phone and fax numbers, email and web site address can be found on page 4 of this informational material.



A typical installation for a single family home



Installation in parallel format to serve multiple users



Singulair cut-away view



Singulair ready for shipping