

APPENDIX 2

Wastewater Treatment Technologies

CPG

AdvanTex® Treatment Systems



AdvanTex® is
one of the most
sustainable wastewater
treatment systems
available for homes.
The filter unit is flush to the
ground and blends into
landscaping.

Reliable, Sustainable Treatment for Residential Wastewater



NSF/ANSI • STANDARD 40 • CLASS I



Oreco Systems®
Incorporated

*Changing the Way the
World Does Wastewater®*

1-800-348-9843
oreco.com
vericomm.net

AdvanTex® – Treatment Systems

Finally! Residential Wastewater Treatment — That Works!

Orenco's AdvanTex® Treatment Systems are the ideal solution for environmentally sustainable treatment of residential wastewater flows.

Outstanding Wastewater Treatment

Unlike other onsite wastewater treatment technologies, AdvanTex provides consistent, reliable treatment under real-world conditions. Other systems work OK in a controlled testing environment, but don't hold up to normal household use. AdvanTex does. AdvanTex Treatment Systems process and discharge small amounts of treated wastewater throughout the day. Water so clean it can be reused for drip or subsurface irrigation, or discharged to shallow, inconspicuous trenches.



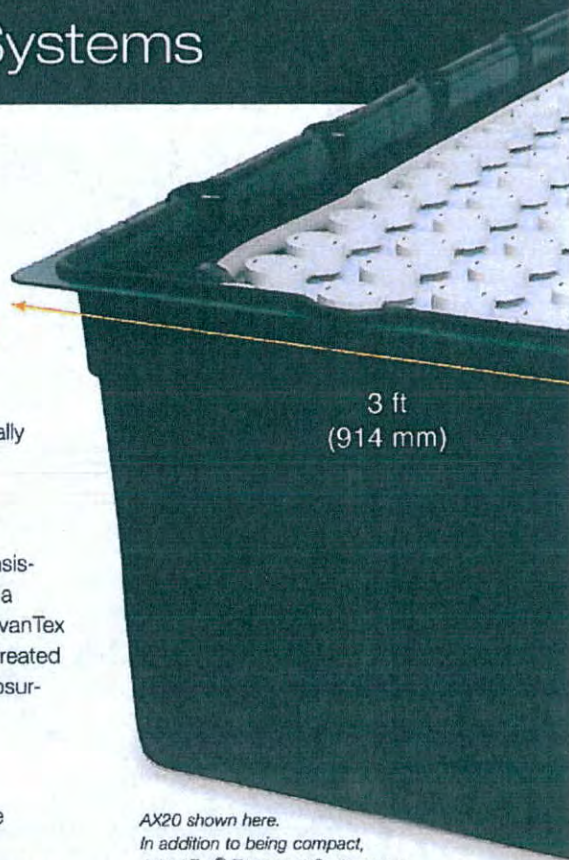
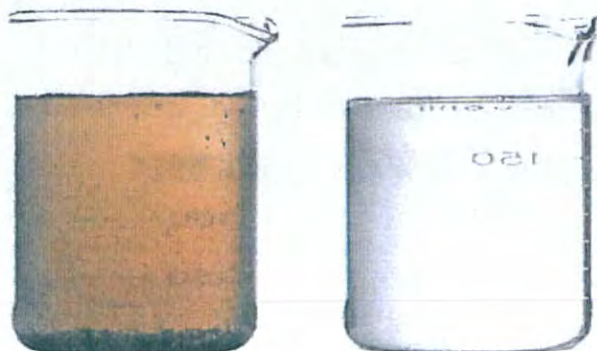
Fits Small Yards

AdvanTex Treatment Systems require very little space. The filter unit is 7.5 ft x 3 ft x 2.5 ft (2286 mm x 914 mm x 762 mm), small enough to fit under a deck or on top of the processing tank. And some jurisdictions allow a reduction in drainfield area with AdvanTex. So AdvanTex is ideal for small sites, or for homeowners who simply want more use of their yard.

Low Lifetime Cost

AdvanTex Treatment Systems may cost a little more up front than other systems, but, thanks to low maintenance requirements, they cost much, much less over time. Power costs, pumping costs, and equipment replacement costs are a fraction of those for other technologies. Plus, AdvanTex filters protect your drainfield.

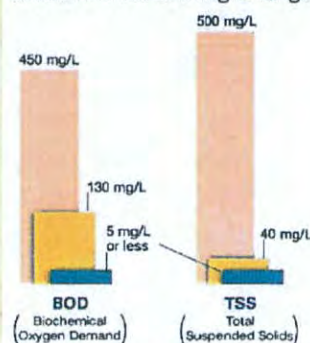
AdvanTex turns household wastewater into clear, odorless effluent you can reuse for subsurface irrigation.



AX20 shown here.

In addition to being compact, AdvanTex® Treatment Systems are easier to operate and maintain than other wastewater technologies. No odors. No power-hungry, noisy blowers. No activated sludge to manage or pump. No discharge of untreated sewage during peak flows or emergencies.

AdvanTex® Treatment Systems make raw wastewater up to 98% cleaner ... consistently producing effluent in the 5/5 mg/L range



■ Typical Household Raw Wastewater¹
■ Typical Filtered Septic Tank Effluent¹
■ Typical AdvanTex® Effluent²

¹ Source: Derived from *Small and Decentralized Wastewater Management Systems*, Crites & Tchobanoglous, McGraw-Hill 1998, p. 183

² Actual performance results, based on a six-month accumulative average from NSF (National Sanitation Foundation) testing on the AX20N at 500 gpd (1900 L/d), using composite sampling

AdvanTex[®] – Treatment Systems

A Sustainable Technology

In the patented* AdvanTex Treatment System, household sewage flows into the processing tank, where it separates into scum, sludge, and liquid effluent. Filtered effluent is dosed to the AdvanTex filter pod, where it trickles through sheets of a synthetic textile. There, naturally occurring microorganisms remove impurities from the effluent. After recirculating between the tank and the AdvanTex filter, the effluent is discharged to the soil via irrigation or a drainfield.

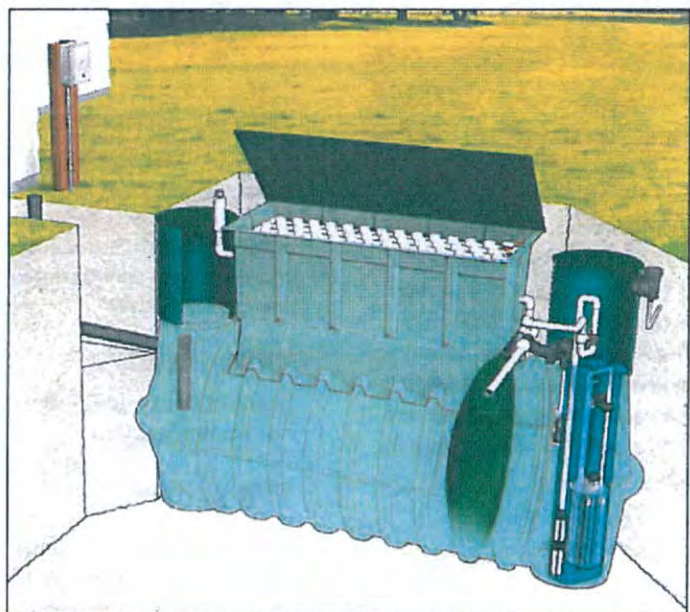
The system's pump runs only a few minutes an hour, using just a few cents worth of electricity a day. Because solids decompose in the tank, the tank requires pumping only every 8–12 years, under normal use. Using little energy, generating a minimum of sludge, and purifying wastewater for beneficial reuse, AdvanTex Systems are one of the most environmentally sustainable technologies for home wastewater treatment.

About 20,000 of Orenco's textile filters have been installed at homes, businesses, and community treatment systems throughout the United States, Canada, Europe, and Australasia. Third-party testing shows that AdvanTex Treatment Systems do a better job of treating wastewater than most municipal sewers. And field testing shows that AdvanTex Treatment Systems work under real-world conditions.

"The effluent from the filter units typically was clear with no odor . . . the increased loading rate allows for a decrease in the footprint required by filter units (compared to sand and gravel filters) . . . in an onsite treatment scenario, textile filter effluent could be utilized for landscape irrigation . . ."

Leverenz, Darby, and Tchobanoglous,
"Evaluation of Textile Filters for the
Treatment of Septic Tank Effluent,"
University of California at Davis,
October 2000.

*Typical backyard configuration of an
AdvanTex[®] Treatment System.*



NOTE: * Covered by U.S. patent numbers
6,372,137; 5,980,748; 5,531,894; 5,480,561; 5,360,556;
5,492,635; 4,439,323; D461,870; and D445,476.
Additional patents pending.

AdvanTex® – Sustainable, Reliable

AdvanTex® **Gives You Peace of Mind**

Orenco's AdvanTex Treatment Systems are not just a product. They are part of a comprehensive program, for homeowners' peace of mind.

Authorized Dealers and Installers

AdvanTex Treatment Systems are sold by trained Dealers, who provide ongoing support and warranty service. Dealers ensure that AdvanTex Treatment Systems are set in place by trained, authorized installers, following Orenco's instructions.

Authorized Service Providers

Like any onsite technology, your AdvanTex Treatment System benefits from management and maintenance. AdvanTex Dealers ensure that systems are routinely maintained by a trained and authorized service provider, following Orenco's instructions. Field maintenance report forms are digitally archived for future reference.

Complete, Carefully Engineered Package

Your AdvanTex Treatment System comes as a totally pre-manufactured package, including AdvanTex textile filter, Biotube® pumping package, and "smart" control panel. AdvanTex can be installed on most lots in less than a day.

Low Routine Maintenance Costs

AdvanTex Treatment Systems are easy to service, easy to clean, and generate no troublesome activated sludge. Since maintenance is minimal, so are the long-term costs. Each system comes with a Homeowner's Manual, with tips for preventive maintenance.

Low Power Costs

AdvanTex uses very little power... an average of \$1.75-\$2.00 per month (based on the national average of ten cents per kilowatt-hour). Compare that to the average power cost of \$30.00-\$60.00 (depending on your area) per month for many "activated sludge" aerobic treatment units!

Safe in Emergencies

AdvanTex Treatment Systems equipped with VeriComm® Control Panels automatically notify service providers of irregular conditions. And systems are sized to allow for a minimum of 24 hours of wastewater storage, at average daily flows. So operators can provide service during normal working hours, keeping service costs down.

Child-Proof

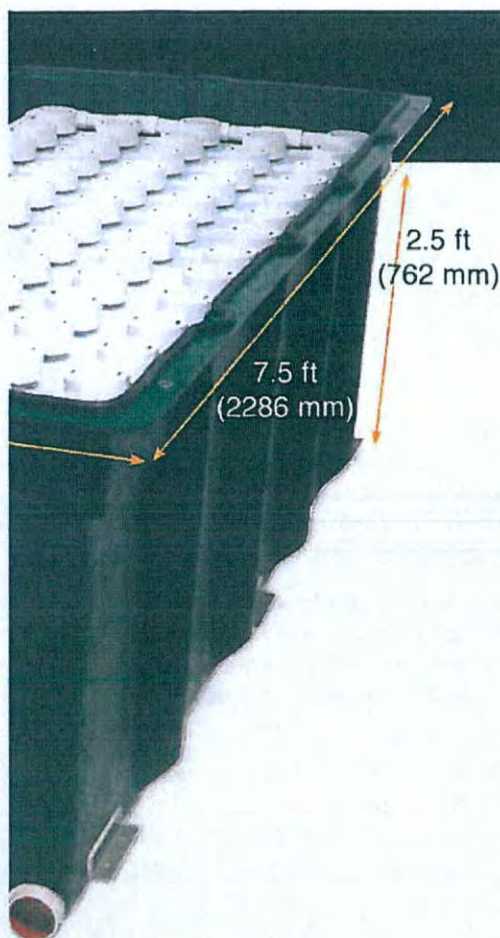
The lid of the AdvanTex filter is affixed with recessed bolts, making it very tamper-resistant.

Warrantied

Orenco Systems®, Inc. provides a limited, multi-year warranty on all materials and workmanship. Length of warranty varies by region but is at least three years.

Round-the-Clock Monitoring

Your AdvanTex Treatment System will include a remote telemetry unit with a round-the-clock, Web-based monitoring system, supervised by your service provider. You'll have even more peace of mind, knowing that the VeriComm® Monitoring System is continually and automatically verifying the operation of your system. For more information, go to www.orenco.com or www.vericomm.net and click on the icon for VeriComm's "On-Line Demo."



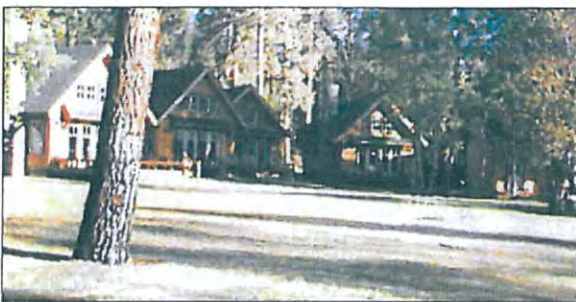
le, Onsite Treatment of Residential Wastewater

For Every Residential Site

There's a standard AdvanTex Treatment System model for every site condition, design flow, and regulatory requirement.

AdvanTex Treatment Systems are particularly well suited for . . .

- small sites
- failing systems
- poor soils
- nitrogen reduction
- environmentally sensitive sites
- stringent treatment standards
- pretreatment of moderately high-strength waste



Deschutes County, Oregon

"I specified an AdvanTex Treatment System for a cluster of 12 luxury homes in the Metolius River Resort, along a premier trout stream in eastern Oregon. AdvanTex worked well because the site has an extremely small footprint and the system was easy to install. Also, the treatment unit is right in front of the Resort's office, so it was super important that there be absolutely no smell, and there isn't. Plus, we didn't have to search for the right treatment media, since it's all included. I would use AdvanTex any place you'd use a conventional recirculating filter."

Steve Wert, CPSS, WWS
Wert & Associates, Bend, Oregon

Tucson, Arizona

"Over 750 AdvanTex Treatment Systems have been installed in Arizona, primarily due to poor soils, seasonal high water tables and/or nitrogen in the groundwater. In Tucson, homeowners and their treatment system designers have also had to deal with limiting site constraints, shallow rock shelves, and small building envelopes. The AdvanTex system, followed by a subsurface drip system, was the answer. Plus, the installed systems go almost unnoticed in yards and landscaping."

Todd Christianson,
Premier Environmental
Products, LLC

Alberta, Canada

"We've installed about 400 AdvanTex Treatment Systems for all sizes of homes, and, typically, the treated wastewater looks just like water. Our winter temperatures can be as low as -38° F (-39° C). In the middle of December, we started up an AdvanTex Treatment System on a 13,000 ft² (1200 m²) home that averages 1200 gpd (4500 L/d). Two weeks after start-up, the owners entertained 30 family members and guests for a full week. It worked great!"

Bruce Silvester, Onsite Specialties, Inc.

Newport, Rhode Island

"I spent six years looking for the right wastewater system for my second home, which is on a small island. Even with seasonal flows, our AdvanTex Treatment System is working great . . . so great, I decided to become a dealer! We entertain often, so we use a lot of water, but we've never had a problem. And the system was easy to transport and install."

Peter Kent, Atlantic Solutions, Ltd.



AdvanTex® – Treatment Systems



Orenco Systems is owned and managed by engineers who develop wastewater systems that work — systems based on sound science.

Clockwise from left:
Eric Ball, P.E., Jeff Ball, P.E., Hal Ball, P.E., (front) Terry Bounds, P.E.



AdvanTex® Treatment System AXN Models meet the requirements of NSF-ANSI Standard 40 for Class I Systems.



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Orenco Systems®, Inc.

Carefully Engineered by Orenco

Orenco Systems has been researching, designing, manufacturing, and selling leading-edge products for small-scale wastewater treatment systems since 1981. The company has grown to become an industry leader, with nearly 300 employees and with more than 100 distributors and dealers representing most of the United States, Canada, Australia, New Zealand,



Your health is our priority. At Orenco Systems, we are committed to "Changing the Way the World Does Wastewater®."

and parts of Europe. Our products and technologies have been installed in 50 countries all over the world.



Orenco maintains an environmental lab and employs dozens of scientists and engineers. Orenco's systems are based on sound scientific principles of chemistry, biology, mechanical structure, and hydraulics. As a result, our research appears in numerous publications, and our engineers are regularly asked to give workshops and offer trainings.

Distributed by:

Building in the country?
Then you'll need

THE OASIS CLEARWATER
Series 2000

AERATED WASTEWATER TREATMENT SYSTEM



Designed for living with this world... because it's the only world we have

Developed in New Zealand for New Zealand conditions, the Clearwater Series 2000 quickly and efficiently turns **all your household waste water** into **high quality irrigation water**, saving your valuable water supply for more appropriate uses



Engineered to perfection!

Why is the Clearwater Series 2000 Technology so effective?

The Clearwater Series 2000 system is not a septic tank! It is an aerated waste water treatment system comprising five stages of treatment. Liquid flows through the system by hydraulic disbursement.

Waste water first enters a **pretreatment, settlement chamber**. It then flows into a **secondary settlement chamber**.

From here it passes via a **revolutionary ZABEL A300 high performance filter**, where further biological and mechanical filtration occurs, into the **central aeration chamber**.

In the central aeration chamber, **thousands of tiny air bubbles** are created by our exclusive Series 2000 fine air diffuser assembly, **constantly mixing the contents and providing essential oxygen** for the aerobic digestion and cleansing process.

The process continues as the water is introduced to our **unique Clarifier unit** prior to flowing into the pump out chamber.

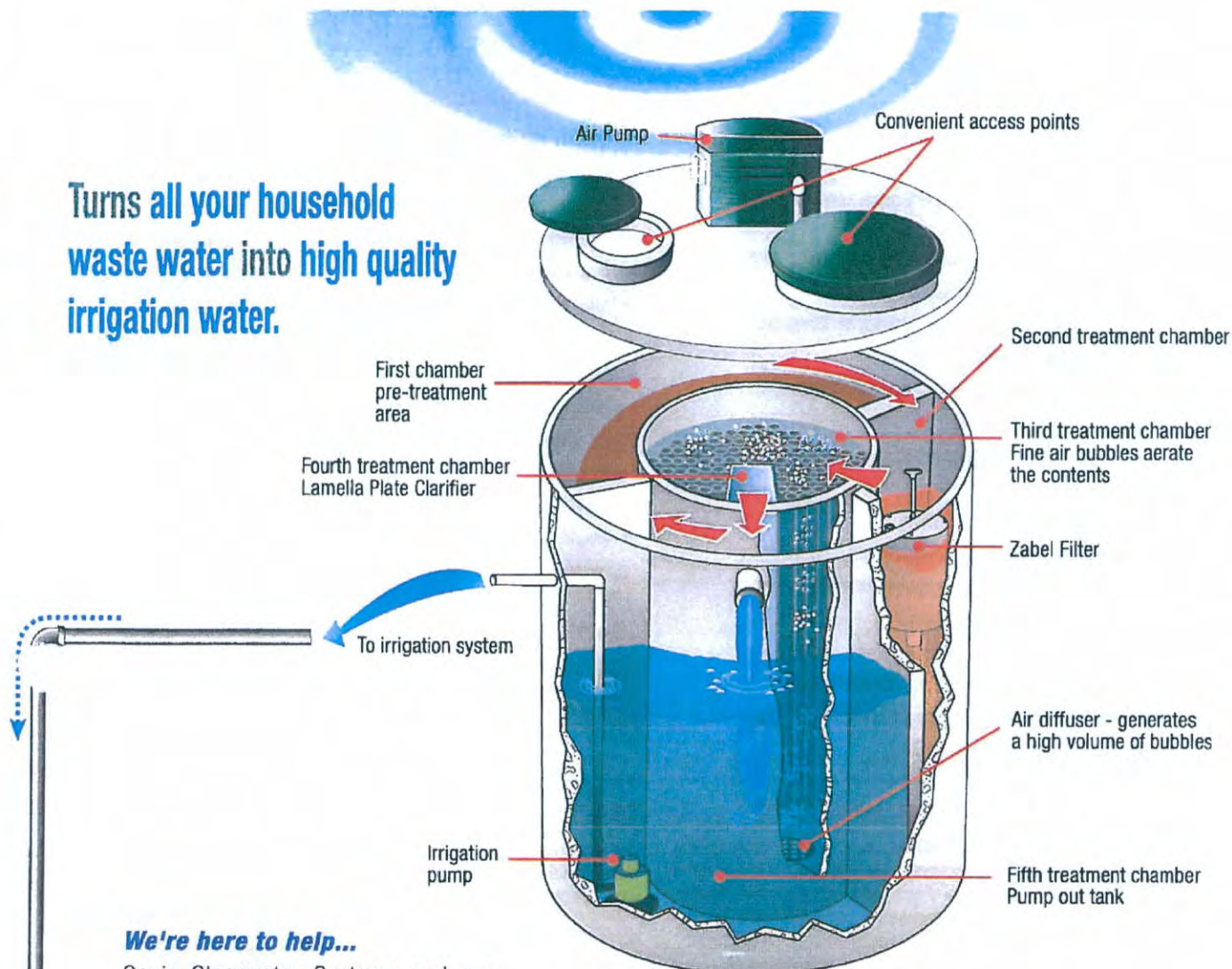
The system is complete with a high quality system malfunction alarm.

Why consider an OASIS SERIES 2000 treatment system?

- *Oasis Series 2000 System treats effluent to a level unobtainable by septic systems.*
- *Oasis Series 2000 System produces a high quality output - Ideal in areas with high water tables, poor soil conditions and where the environment is at risk.*
- *The Oasis Series 2000 System is highly energy and maintenance efficient.*
Overall costs are less than other on site systems.
- *The Oasis Series 2000 System is an established, proven technology backed by a New Zealand company with over 15 years experience in waste water treatment plants.*
- *We install every aspect of the plant, including the irrigation system.*



Turns all your household waste water into high quality irrigation water.



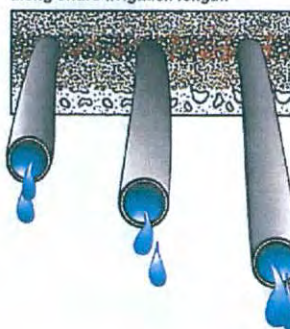
We're here to help...

Oasis Clearwater Systems and our Distributors are dedicated to helping you solve your on-site waste water problems.

We are firmly committed to manufacture the highest quality products to ensure the protection of our environment.

Our systems are designed to Internationally recognised performance standards.

Pressure compensated dripper lines ensures an even delivery of moisture along entire irrigation length.



With the high quality of the Clearwater Series 2000 end product, several discharge options are available - Including grasslands, shrubs and trees.



Advantages of the Oasis Series 2000 System

Home owners

- Protects water quality and enhances owners' quality of life.
- Saves water, money and protects our environment.
- Low operating and maintenance costs.
- Durable precast concrete, no plastic or fibreglass.

Councils and Developers

- Highly reliability, low maintenance systems.
- Reduced operating costs.
- Increased public health protection.

Engineers

- Proven design and Engineering.
- Reliable performance, reduced costs.
- Systems for domestic and commercial applications.
- Ideal for failed system renovation.

Contractors and Installers

- One chamber - one hole - one connection.
- Low maintenance, full range of spares available.
- On going manufacturer backup.

Technical specifications

• Primary Pre-treatment chamber	3500 litres
• Secondary Pre-treatment chamber	750 litres
• Aeration and Lamella Plate Clarifier chamber	2150 litres
• Pumpwell	1050 litres
• Total operating capacity	7450 litres
• Total holding capacity	9400 litres
• Control panel - Audio and visual alarm	
• Purifying aerator	80 Watts
• Tank construction - All concrete	

Tank Dimensions

• Height	2500 mm
• Diameter	2500 mm
• Weight	7.5 Tonnes

Consistent with our policy of product improvement, we reserve the right to alter specifications without notice.

Certifications

N.Z TP 58 APPROVAL - 3rd Edition
AUS/NZS 1547.2000 - On Site Domestic Waste Water
AUS/NZS 1546 s 1: 1998 - Septic Tank Manufacture

Our company and our capabilities

Oasis Clearwater Environmental Systems has been pioneering onsite wastewater treatment since 1990. Our team of qualified professionals have many years of combined experience designing and developing innovative technology and systems to meet demanding standards for waste water treatment.

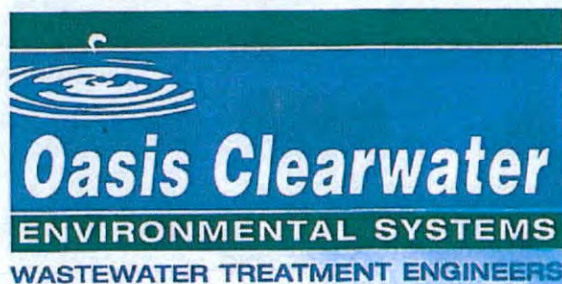
We have also established close working relationships with several leading international authorities and manufacturers of similar equipment to complement our knowledge.

We offer a full range of services including

Design and construction.
Liaison with local and regional councils.
Upgrading of existing systems.
Maintenance programmes.
Domestic and commercial applications.

Committed to quality

To ensure constant quality, our products are manufactured, assembled and fitted out at our own concrete product manufacturing plant.



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