lifeRain™

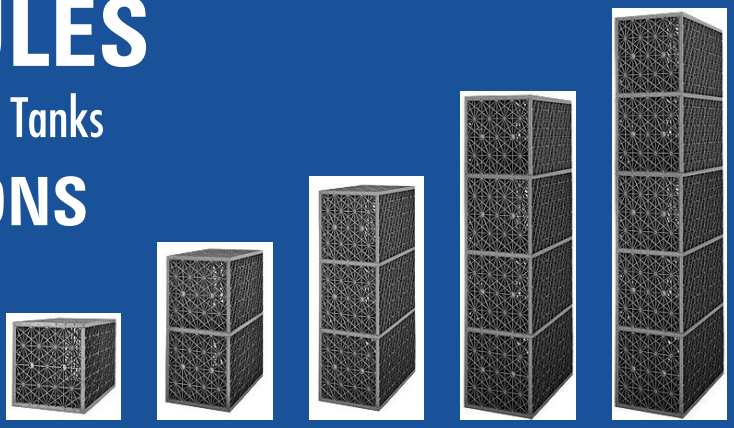
From water shortages to
water abundance

www.liferain.net

LIFERAIN™ MODULES

Smart & Modular Underground Water Tanks

FLEXIBLE APPLICATIONS



Company Profile

Established in 2000, Life Green Systems (LGS) is a Sustainability expert assisting its Clients and partners in planning, designing and implementing innovative Green solutions to our pressing problems. Our Clients include Architects, City Planners, Builders & Developers, Multinational companies and other end users. We are dedicated to technologies that are efficient, eco friendly & inspired by nature.

Vision: To restore beauty and make everyday infrastructure smart and green through innovative solutions for creating Green Cities, Clean Waters and a Better Life.

Mission: To achieve our vision through continuous learning, improving and setting the highest standards in providing our clients innovative green products, solutions and world class services in water management and urban ecology.

Projects Locations

MERITS OF OUR PRODUCTS

GRIHA Certified (LifeRain™ Micro Filters)

Made from recycled polymer

Modular-allows vertical & horizontal expansion.

LEED Credits for Water Efficiency (WE)

Energy Conservation & Commercialization

Fresh Water Management

- Modular Rainwater Harvesting
- Underground Water Storage Tank
- Groundwater Recharge / Artificial Recharge
- Urban Flood Mitigation
- Urban Sustainable Drainage System / Ecological Channels
- Pond / Lake Development

Inovative
Green Technologies

Planning | Design | Implementation | Payoff

Planning

- Site Evaluation
- Water Conservation and Recharge Measures
- Return on Investment Analysis

Design

- System Specifications
- Engineering Drawings

Implementation

- Site Installation
- Testing and Commissioning

Service

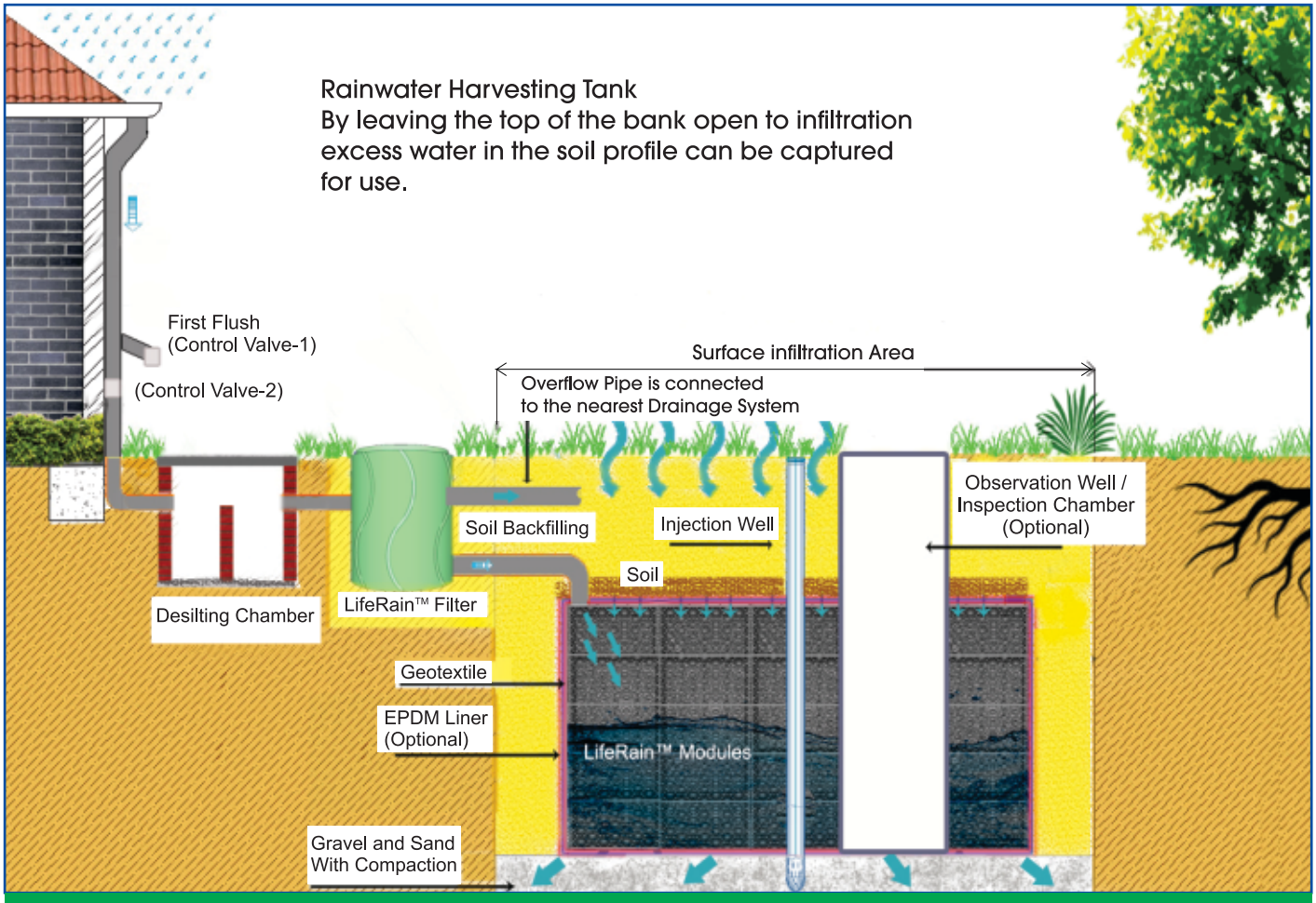
- Full System Warranty
- System / Product Training

Products

- LifeRain™ Modules
- Risers/ Filters Extension
- Geotextile
- EPDM Liner
- LifeRain™ Downpipe Filters
- Observation Well
- Piezometer
- LifeRain™ Micro Filter and Borewell Filter
- Flow Meter

LifeRain™
Modular Underground Water Tanks

LifeRain™ is designed to enable a better quality of life while upholding the socio economic aspects of ecosystem. This product can radically assist in preventing decaying infrastructure due to flash flooding or storm water run-off. The flexible applications of LifeRain™ in the field of fresh water management technologies are the reason why this product has become the first choice of those who value money, time & environment. It comes with unlimited water capturing capacity for recharge, recycle and re-use. The conventional rain water harvesting and storm water management system are being completely replaced with LifeRain™ modular technology. Due to its lightweight modular structure, LifeRain™ is easy to install and safer unlike any ordinary civil work.

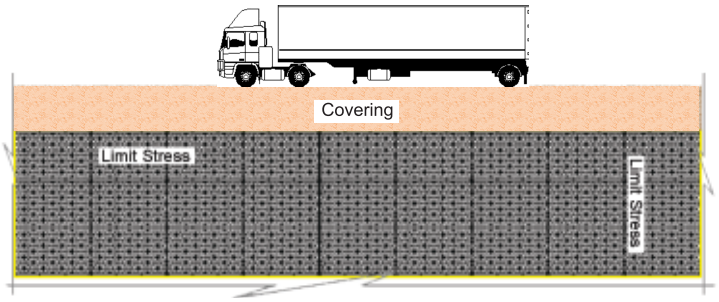


Recharge | Retention | Reuse | Percolation | Infiltration

LifeRain™ Specifications

- Void ratio upto 96.5%
- Crush load capacity in 20 tons per sqm.*
- Traffic bearing capacity upto 40 tons per sqm.*
- Material is recycled polypropylene
- Vertical dimensions ensure maximum strength

** With adequate backfilling*

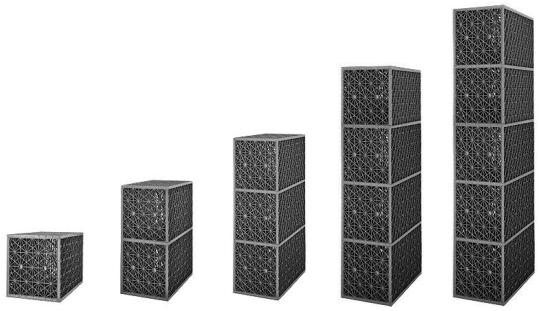


Advantages

- Eco friendly, qualifies for getting carbon credits
- Can be used for any type of landscaping
- Low maintenance costs
- Quick installation
- Unlimited water storage capacity
- Increases land value
- Reduces polluted stormwater runnoff
- Less environmental footprints
- Qualifies for LEED points / Green Ratings
- Easy to expand and relocate according to new site plans
- Long shelf life of 100+ years
- Clog free, safe & highly load bearing
- Strong structural design
- Provides an ecologically sustainable stormwater system
- Full system guarantee
- Creates aerobic conditions inside the tank through capillary action

Why LifeRain™

- **High performance aesthetics:** Strong structural design and lightweight.
- **Cost effective:** It saves time and money in installation and less civil works costs in any kind of soil.
- **Smart utilization of space:** Top surface can be used for parking lots, gardens, lawns, children's playground, sports fields, etc.
- **Safety first:** Completely underground and no easy access to storage space. No risk, even for applications in schools.
- **Water quality:** The surrounding sand and geotextile ensure improved water quality of recharge ground water through LifeRain™.
- **Low maintenance:** Easy to maintain unlike other conventional rain water harvesting systems.
- **Environmental friendly:** LifeRain™ is made of 100% recycled polypropylene.
- **Future benefits:** It increases the value of the property and protects it from flash flooding and water shortage problems as the mains water dependence is significantly reduced after LifeRain™ installation.



LifeRain™ Frequently Asked Questions:

Q: What maintenance is required for the LifeRain™ tank modules?

A: None.

Q: What maintenance is required for the filtration unit?

A: The filtration unit should be regularly cleaned out after rainfall and washed.

Q: What is the purpose of the geotextile?

A: The geotextile prevents the surrounding bed of sand from entering the tank and protects the waterproof liner from any potential sharp edges.

Q: Can I drive over the tank?

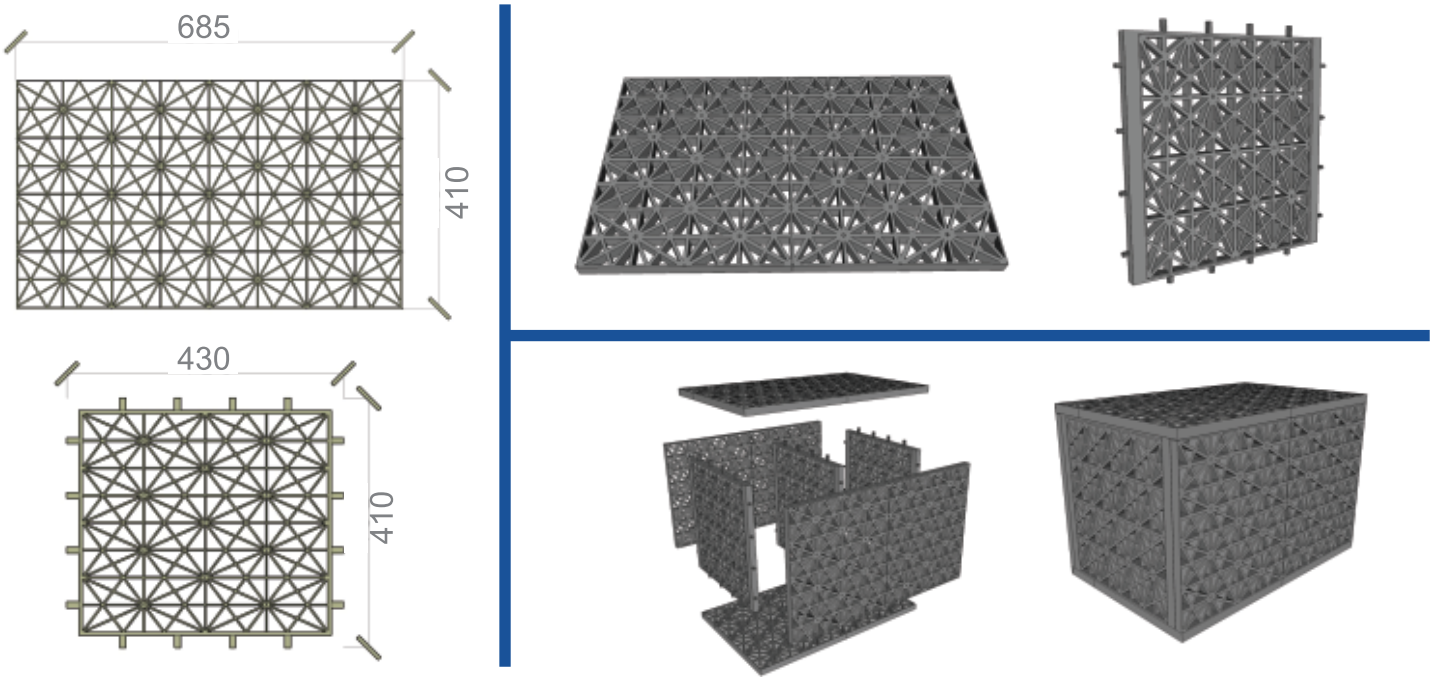
A: Yes.

Q: How do we know about the quality of the retained water in the LifeRain™ tank Modules?

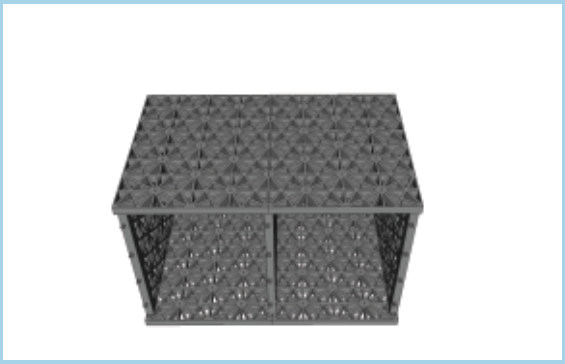
A: The capillary action of water within the tank provides continuous motion due to the surrounding sand and geotextile.
The continuous motion provides additional surface area for aerobic decomposition and prevents stratification (layering) of the water. Hence, keeping the water quality fresh.

LifeRain™

LifeRain Plates™ Arrangements

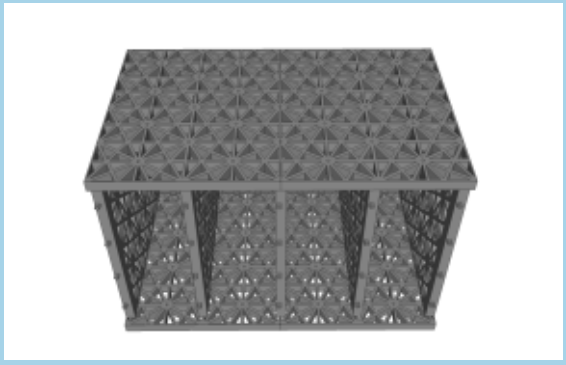


With Three Plates Arrangement

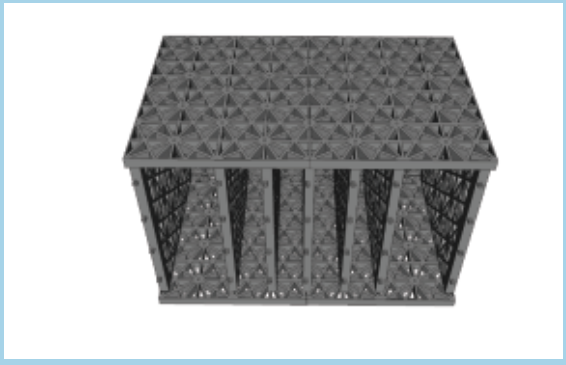


With Four Plates Arrangement

With Five Plates Arrangement



With Seven Plates Arrangement



N.B.: Depending upon site condition and load bearing capacity required.

LifeRain™
Height & Void Ratio of LifeRain™ Modules

Drain Invert Level (m)	Modules Configuration*							
	3 Plates		4 Plates		5 Plates		7 Plates	
	Ht. of Structure	Void Ratio %	Ht. of Structure	Void Ratio %	Ht. of Structure	Void Ratio %	Ht. of Structure	Void Ratio %
0.5	1.74	97.2	1.74	96.5	1.74	95.4	2.17	96.8
1	1.27	96.5	1.74	96.5	1.74	95.4	2.17	96.8
1.5	0.88	95.6	1.74	96.5	1.74	95.4	1.74	94.2
2			1.27	95.8	1.74	95.4	1.74	94.2
3			0.88	95.6	1.27	95	1.74	94.2

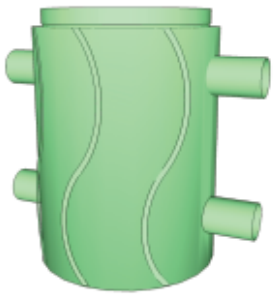
*** The number of plates are added in the module for increasing load bearing capacity**

DUAL STEP PRE FILTRATION

The trash screen collects all gross pollutants and micro pollutants as small as 90 microns.

The large filtration unit features a lightweight aluminium lid allowing easy access for maintenance.

LIFERAIN™ MICRO FILTER



Flow Rate: Approximately 40-80 cum per hour or above
Diameter: 600mm / 750mm
Connections: 2 inlets and 2 outlets
Height: 1000mm

Digital Water Level Recorder

It measures PRESSURE and are available in several pressure ratings from 345 to 6895 kPa.

Operating principle & output signal
The Digital Water Level Recorder consists of internal strain gauges which convert mechanical motion into an electronic signal. Resistance is proportional to the strain experienced by the sensor. If a wire is held under tension, it gets slightly longer and its cross-sectional area is reduced. This changes its resistance (R) in proportion to the strain sensitivity (S) of the wire's resistance.

Components / Specifications:
- Outer body SS
- Internal strain gauge sensor
- Internal pressure diaphragm
- Filter tip (high or low air entry)
- Cable up to 10m (expandable upto 100m)
- Various outputs

Advantages:
- Fast response
- Suitable for dynamic measurements
- High accuracy
- Easy to read upto 100m deep
- Can be easily automated
- Various outputs

Risers / Filter Extensions

To make a void space under ground to reach underground services. Ready to make a void surface without any civil work.

Advantages:
- Easy to install
- No civil work required
- Appropriate and huge size to use as a Man hole.
- Can be used any underground vertical length
- Modular Technology

Specifications:
- Dia : 600mm/ 750mm
- Height : 1000mm (Increase or decrease according to the site condition)
- Material of Construction : FRP

Installation of LifeRain™ Modules

Step 1:
Excavation & Recharge Well

Step 2:
Base Preparation

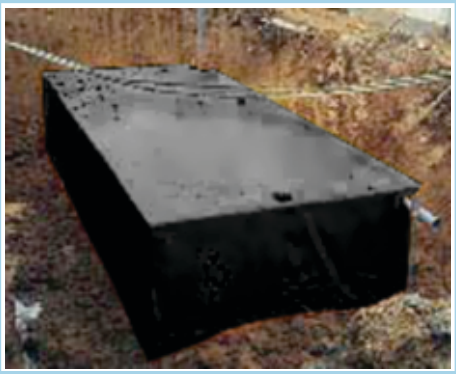
Step 3:
Geotextile Cutting & Laying

Step 4:
Assembling of LifeRain™ Modules

Step 5:
Geotextile Wrapping of LifeRain™ Modules

Step 6:
Modules wrapped in geotextile

Step 7:
Water storage tank with Liner
(for underground water storage tank)



To watch LifeRain™ installation video, please visit
www.liferain.net/liferain-installation

Comparison Between LifeRain™ & Conventional Rain Water Harvesting System

Benefits and value additions of LifeRain™ over conventional RWH

Criteria	LifeRain™ Modular RWH	Conventional RWH
Clog prevention and reliability	Advanced dual-step Pre filtration, subject to prompt maintenance.	Gravel based filtration.
Time for installation (tank only)	This process takes merely 1 to 15 days irrespective of the tank size.	45 days to several months to layout PCC, brickwork, plaster, steel framework, RCC.
Effective detention volume (storage capacity)	96.5% of tank volume, very compact and optimal space utilization.	Tank volume less – Free board space (0.5 to 2m) Filter media volume (20 – 30% of tank volume).
Space utilization	Top surface can be used for Parking lots, Gardens, Lawns, Children's playground, Sports fields, etc.	Generally, located where land use is demarcated as unusable. Requires over designing of cover slab to accommodate lawns or parking lots at the surface level.
Load bearing challenges	Load bearing capacity of these panels is very high and can take up to 40 tonnes/m2 without requiring special load bearing designs depending on the configuration *(Refer Page 7)	Architects involvement and civil contractors honest work essential to ensure load bearing of cover slab.
Safety	Completely underground and no easy access to storage space. No risk involved, even for applications in schools / colleges / kindergartens.	Manhole access to hollow storage space. History of accidents during maintenance. Accumulation of poisonous and odorous gases, owing to deterioration of organic matter inside the tank.
Environmental impact	Material is made of 100% recycled Polypropylene. Can be recycled in the future as well. Eco-friendly, qualifies for Green Rating LEED Points.	Sourcing gravels and pebbles is a challenge. RCC material is used for construction.
Life and material standardization	Modules, Geotextile, and waterproof liners are lab tested based on various criteria. Quality assured. Very long life (100 years for the RWH structure) and can be recycled.	Life with good quality work is 20-30 year. Poor quality of work may cause the project to fail. Quality assurance is a challenge.
Reduce/extend	Tank size could easily be extended or reduced or even relocated as per future use.	Requires construction of a new tank, if future usage or requirement changes.
Seasonal challenges	Could be installed between rainfall events.	Work completion dependent on good weather. Monsoon season pretty much stalls all work.

Final sites after LifeRain™ Installation

Paved Area

Grass Area

Sports Ground

Driveway / Parking Area

"Life Green Systems is working according to the standards and guidelines of Central Ground Water Board (CGWB). The work is much satisfactory and worth the recognition."

- Central Ground Water Board (Govt. of India)

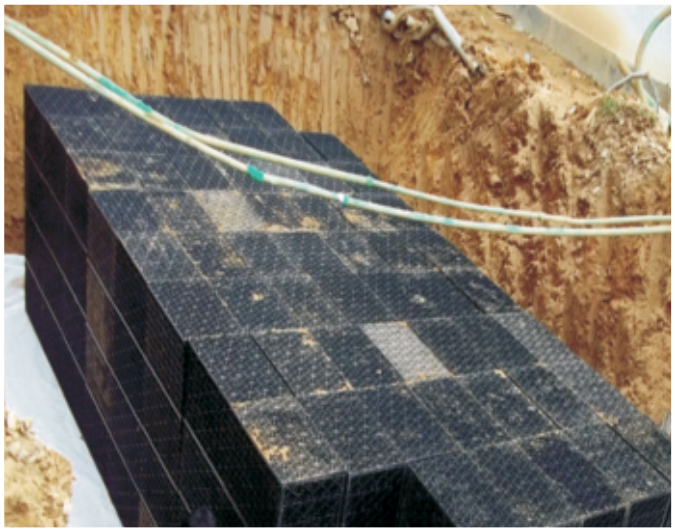
Case Study
LifeRain™ Modular Underground Storage Tank

Modular Underground Storage Tank in Nagaland (India)

Life Green Systems has successfully installed 11 modular underground water storage LifeRain™ tanks in Dimapur, Nagaland for the client who needed a solution to reuse water for irrigating planting beds during dry periods. The average Capacity is 700 cubic meter of the underground water storage tanks. Our LifeRain™ modular technology was apt to meet the needs of the project site.

Excavation for the underground tank

Base preparation



Installation of LifeRain™ Modules

LifeRain™ Modular tanks after wrapping of Geotextile and liner

"We are highly impressed with consultancy service on "Feasibility of Rainwater Harvesting Structures" by Life Green Systems. The zeal they work with is truly commendable."

- Military Engineering Services

Storm Water Management through Ecological Channels in Rajasthan (India)

Water capturing capacity is 260 cum from storm events with total length of 800 meter. Average covered area for capturing water is 42500 sq.m. for discharging to local waterways.

Our efficient Ecological Channels has become a source for capturing entire storm water that falls in the area. Taking advantage of Life Green Systems' LifeRain™ modular technology, water can be recharged and reused with high quality.

Excavation work and assembling of LifeRain™

Geotextile wrapping of LifeRain™

Installation of LifeRain™ Modules and Backfilling

Final Site

"Life Green Systems has done remarkable work at our site in Rajasthan. We are happy with the detailed Groundwater studies, geophysical surveys & installation of Modular Rainwater Harvesting System."

- Honda Motorcycle & Scooter

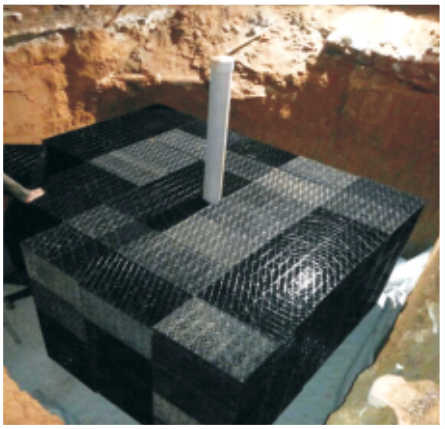
Urban Flood Mitigation through efficient Storm Water Management System in New Delhi (India)

Urban Flood Mitigation through Storm Water Management System has been installed in New Delhi, India on June 2014 where other systems couldn't cope with the existing site conditions. Life Green Systems LifeRain™ aptly dealt with the flood water and provided an apt installation to the client. The LifeRain™ system is a modular technology that requires far less civil work. Life Green Systems Stormwater Management System is a sound environmental and economic investment when the effects of flooding and property damage are considered.

The client was witnessing the water logging of 1.5 feet due to flooding inside factory premises. We identified the issue of overflowing of drainage pipeline with zero management of collecting rain water. We designed 4 rain water harvesting pits by installing LifeRain™ and constructed proper rainwater pipeline to capture rooftop rain water. Execution of sluice valve has been done by our technical team to operate drainage pipeline effectively.

Preparing the base for LifeRain™ modular tank installation

Drilling of Borewell to recharge the ground water



Assembling of LifeRain™ Modular tanks on top of the Geotextile

LifeRain™ tanks are wrapped in Geotextile

Backfilling

Final Site

Automobile Facility in Haryana (India)

The Annual Recharge capacity is 55,258 cum. Our Modular technology allowed for same capacity of recharging as conventional system with higher void area and 30% lesser footprint.

The client is from an automobile industry so their major requirement was to recharge and channelize rainwater with zero oil particles. Initially, the ground water quality was adversely affected, in order to resolve this problem, Life Green Systems has successfully designed and installed customized oil separator to separate oil from the rainwater. This solution makes possible the oil separation up to 99.99%. for the client site.

Excavation work


Base Preparation


Laying and Cutting of Geotextile


Installation of LifeRain™ Modules and Oil Pad

LIFE GREEN SYSTEMS

Green Cities | Clean Waters | Better Life

Clientele

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