

Ben's Recycling Exceeds Stormwater Regulations with Advanced LID

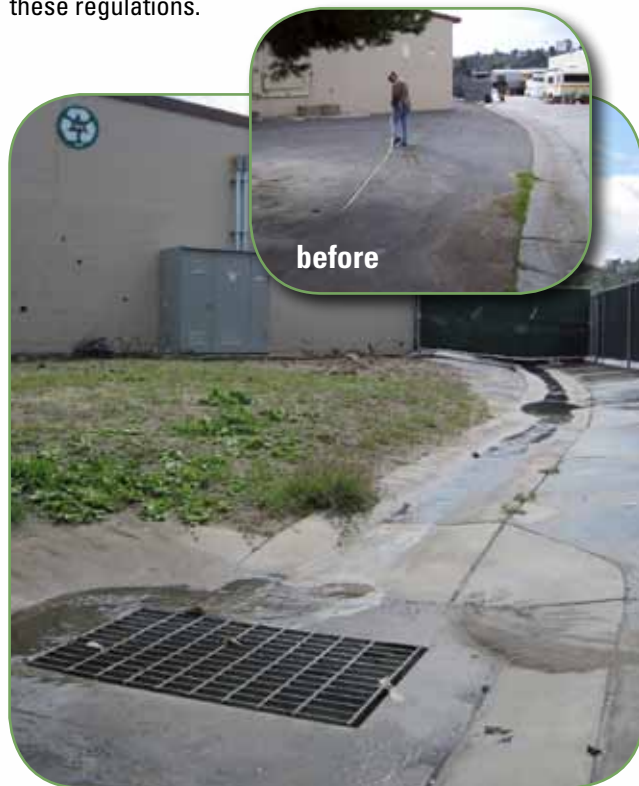
State-of-the-Art Indoor Recycling Center Utilizes Modular Wetlands Infiltration System

The Situation

Oceanside, CA – Since 1995, Ben's Recycling Center has been taking waste and unwanted electronics safely off your hands while generously compensating you. Not to mention the long term and healthy effects it is having on our environment. Talks of expanding the facility lead the owner to contact Modular Wetland Systems, Inc.

The proposed project would be a state-of-the-art indoor recycling center located at 395 Via del Monte in Oceanside, CA, around the corner from their current location. The drainage area of concern was approximately 30,000 square feet or .68 acres.

Dan Kwak of Ben's Recycling contacted Zach Kent, Modular Wetlands, in October of 2008 to discuss his concerns and possible solutions. Ben's Recycling is mandated to be in compliance with Phase I Stormwater Regulations, but Dan and the owner expressed their desire to implement an advanced stormwater treatment system with capabilities vastly exceeding these regulations.



The Challenge

Several existing site constraints limited the choice of available BMPs. The main challenge posed to be no sub-surface drainage infrastructure on the property or in the street. Runoff can only be conveyed off the site by sheet flow from the current ribbon gutter. The existing grading of the site dictates that runoff flows to the far Northeast corner of the property, then to the street through a ribbon gutter located along the West side of the property, which eventually discharges directly into the San Luis Rey River.

A significant portion of the property's drainage area is roof tops, while the remaining area is paved. This site is 100% impervious. The recycling facility activities will take place indoors therefore yielding a significantly lower pollutant loading concentration than traditional outdoor recycling facilities. However, the loading and unloading of recyclables will generate some level of pollution in the parking lot; the client requested advanced treatment for this area. They anticipate heavy metals, nutrients, organic compounds, sediments, trash & debris, oxygen demanding substance, and oils & grease.

All industrial facilities are required under Phase I of the NPDES permit to treat stormwater discharge. The runoff from this site flows to the San Luis Rey River and Pacific Ocean. These waterways are on the 303(d) list due to impairment by Chloride, Total Dissolved Solids, and Bacteria Indicators.

All industrial facilities are required under Phase I of the NPDES permit to treat stormwater discharge. The runoff from this site flows to the San Luis Rey River and Pacific Ocean. These waterways are on the 303(d) list due to impairment by Chloride, Total Dissolved Solids, and Bacteria Indicators.

About Modular Wetlands

A new and revolutionizing product from Bio Clean is the Modular Wetland System (MWS). This system is the industry's first hybrid stormwater treatment system. While most systems utilize a single treatment method, the MWS incorporates a combination of many. It removes trash, floatables, oil and grease, sediments, heavy metals, nutrients and bacteria. Perfect for GREEN design and sustainable projects. For more information on MWS visit www.modularwetlands.com.



T 760.433.7640

E info@modularwetlands.com

www.modularwetlands.com

Ben's Recycling Exceeds Stormwater Regulations with Advanced LID



The Solution

After an in-depth analysis it was determined that the soils on site have appropriate infiltration rates making this an ideal candidate for an advanced infiltration system. The soil is A type, TuB – Tujunga Sand, the best soil with infiltration rates starting at 5.95 in/hr. Given this information and the above limitations the best solution is a treatment train BMP incorporating screening, hydrodynamic separation, media filtration and biological filtration followed by storage and infiltration.

The existing paved area in the Northeast corner of the property will be turned into a landscape area containing the custom designed Modular Wetland System – Linear with patented underground wetland chamber. Given the grading of the site, runoff will flow directly to a custom designed 4' x 4' x 4' grate type catch basin. This catch basin contains the first three stages of treatment: screening, separation, and media filtration (BioMediaGREEN).

Following the media filtration the water discharges out of a series of specially designed perforated pipes into the subsurface flow wetland where it is then infiltrated back into native soils. This system uses a specialty wetland media with more void space (48%) than traditional rock backfill (40%).

This unique situation was designed to capture, store and infiltrate a capacity of up to 4,407 cu ft over a 24 hour storm event (static capacity is 979 cu ft). The capacity of this system vastly exceeds the calculated WQV of 1,481 cu ft for the drainage area.

The Result

The above solution provides heightened treatment as opposed to other options. This unique design allows for gradual recharge into native soil, protection of ground water, and runoff

off from leaving the site, therefore avoiding future pollutant testing and cost savings, while protecting the downstream impaired bodies of water. Another option was to capture and hold the treated runoff in a catch basin then pumping out the water. This option would have been much more expensive and time consuming for the owner. Over the past year no runoff has been observed leaving the site. "I am very happy with how the system has performed. Even better, the annual maintenance is cost is only \$600," said Dan of Ben's Recycling.

About Ben's Recycling:

This full service recycling center has been around for over 15 years. This center provides customers with cash for everything from CRV materials to metals to old electronics. Unlike other recycling centers, this indoor facility prevents pollutants from being washed away during rain events therefore minimizing the environmental impact of the operation. With over 30 parking spots customers never have to wait.



T 760.433.7640

E info@modularwetlands.com

www.modularwetlands.com