TENCATE
Geotube

Case Study

application	Lagoon Cleanup	job owner	Duck Pond Cellars Dundee, Oregon
location	Dundee, Oregon	consulting engineer	Peter Evans
product	Geotube® Dewatering Technology		

TenCate develops and produces materials that function to increase performance, reduce costs, and deliver measurable results by working with our customers to provide advanced solutions.

THE CHALLENGE

Wineries around the world utilize waste lagoons to deposit the waste products from the wine making process. This includes the pulpy residue, known as "pomace", and the insoluble material (or liquid sediments) known as "lees". These waste products often produce unpleasant odors and lead to environmental concerns.

This was the issue facing Duck Pond Cellars, an award-winning winery located in Oregon's beautiful Williamette Valley. Their on-site lagoon was full of pomace and lees, and required cleanout.

An innovative approach to long-term solids management and water quality was offered by Peter Evans, a consulting engineer. Evans suggested using Geotube® units in tandem with a man-made wetland or subsurface flow (SFF) system. The first order of business, however, was to clean out the winery's lagoon before creating the Geotube® dewatering technology/SFF water treatment system (see Figure 1).

THE SOLUTION

The objective of the project design was to modify the existing wastewater treatment system and replace it with the Geotube® unit/SFF alternative in order to remove primarily biological oxygen demand (BOD) and the total suspended solids (TSS).

The steps in the design are (Evans, 2006):

- Pretreatment of the pomace and lees with a cationic polymer;
- Solids capture in a Geotube® unit;
- Revitalize the 200,000 gallon holding pond to provide wastewater fines settling, aeration, and polishing;
- Construct a SFF wetland, 37 ft. (11.3 m) wide and 116 ft. (35.4 m) long;
- Establish treatment of 5,000 gal (18,927 l) per day with 10 day retention;
- Redirect the effluent either for use in the winery or into a shallow irrigation/ groundwater recharge plot.

Dewatering with Geotube® technology is a three-step process. In the confinement stage, the Geotube® container is filled with dredged waste materials. The Geotube® container's unique fabric confines the fine grains of the material.

In the dewatering phase, excess water simply drains from the Geotube® container. The decanted water is often of a quality that can be reused or returned for processing or to native waterways without additional treatment.

In the final phase, consolidation, the solids continue to densify due to desiccation as residual water vapor escapes through the fabric. Volume reduction can be as high as 90 percent.

THE PERFORMANCE

Clean out of the Duck Pond Cellars lagoon utilized a 45 ft. (13.7 m) circumference by 100 ft. (30.5 m) standard, in-stock Geotube® unit.

Figure 2 shows the cationic polymer metering system which injects the conditioner into a simple serpentine mixing chamber before injection into the Geotube® unit.

(MORE)

Figure 1. Cleaning the lagoon with Geotube® unit in the background.

TENCATE Geotube

Total volume of the lagoon involved the dewatering of 300,000 gallons of wastewater at 2% in situ TSS. This yielded 165 cy (132 cm) or 25 dry tons of dried (22% TSS to date) pomace and lees.

The pumping rate was 250 GPM with the objective of achieving 28% TSS after eight weeks of dewatering.

Figure 3 shows the completely filled Geotube® unit next to the lagoon. Figure 4 shows the cleaned lagoon with an aeration system now in place. The dewatered lagoon material will eventually be applied to the adjacent pinot noir grape vineyards.

This cleanup project is ongoing and the Geotube® container is working effectively. In fact, odors are no longer coming from the winery's lagoon, neighbor complaints have ended, and Oregon's Department of Environmental Quality is satisfied and no further threats of citations have been issued.

According to Greg Fries, Duck Pond Cellars' wine maker and operations manager, the company is opening another winery operation in eastern Washington and intends to utilize Geotube® units in this new location.

Evans concluded, "the Geotube® Dewatering Technology solved the winery's immediate problem by eliminating the odors and cleaning the lagoon. Geotube® units will be a permanent solution to managing the winery's waste stream."

Figure 2. Polymer metering system with Geotube® unit.

Figure 3. Filled Geotube® unit next to clean lagoon.

Figure 4. Aeration system providing aerobic digestion to the clean lagoon.

REFERENCES

Many thanks to design engineer, Peter Evans, and TenCate Project Manager, Mark Torre, for their assistance in producing this case study.

3680 Mount Olive Road
Commerce GA 30529

Tel 888 795 0808
Tel 706 693 1897

Fax 706 693 1896
www.geotube.com

QUALITY ASSURANCE
GAI-LAP-25-97
ACCREDITED LABORATORY
ISO9001:2001

TENCATE
materials that make a difference