



# Dairy Farms: YSI Instruments Map Volume of Wastewater Lagoons

## Problem

On July 1, 2010, dairy farm waste management plans are due to the California Regional Water Quality Control Board.

The Board's Order—No. R5-2007-0035 *Waste Discharge Requirements General Order for Existing Milk Cow Dairies*—requires determination of adequate containment capacity for process wastewater. This determination of storage volume requires either surveying of cross-sections in wastewater lagoons or assumptions from design/build documents.

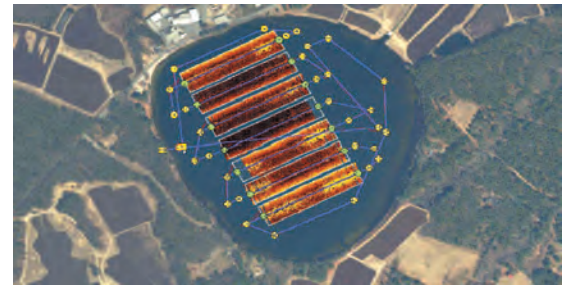
## Solution

The YSI EcoMapper provides a safe and data-rich way of surveying and assessing the current volume and water quality of a waste lagoon, holding/retention pond, or containment structure.

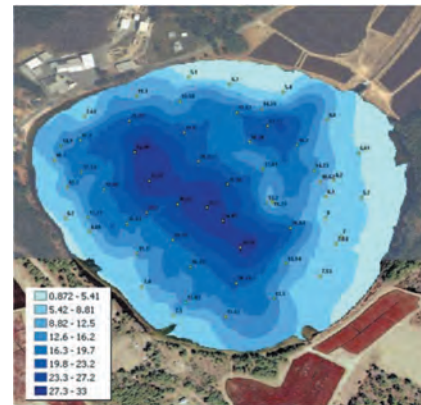
The EcoMapper is an autonomous vehicle which collects continuous data points throughout a water body. It maps the contours and bottom of the lagoon, providing bathymetric maps and depth data. Sensors on the vehicle also assess overall water quality, including near discharge points as well as mixing.



Mission plan is designed to cover entire pond.



Bathymetry map captures contours and volume of pond.



Depth profile of pond

## Benefits

- Non-contact
- Reduced liability
- Long-term data record

## Cost Savings with the EcoMapper is achieved:

- If pond shape is complicated
- If lagoon is large
- At multiple sites, because mapping missions and data analyses are fast and convenient
- By calculating multiple data results—volume, stage/volume relationship, and topography

Pond	Date	AUV	Mission Hours	Sample Points	Surface Area (acres)	Volume (cubic feet) (millions)	Gallons Water (billions)	Gallons Water/inch (billions)
Little Quittacas	05/15/08	4	8:30:45	30,550	297	84.5	0.6	8
Great Quittacas	08/07/08	3	12:31:26	44,840	1,128	641	4.8	31
Assawompset	08/21/08	3	15:18:53	61,135	2,091	811	6.1	57
Pocksha	09/19/08	1	2:41:22	9,647	563	226	1.7	15
Long	10/10/08	3	10:09:49	36,432	1,721	627	4.7	47
<b>Total</b>		<b>14</b>	<b>49:12:15</b>	<b>182,604</b>	<b>5,800</b>	<b>2380</b>	<b>17.9</b>	

Water volume computation table

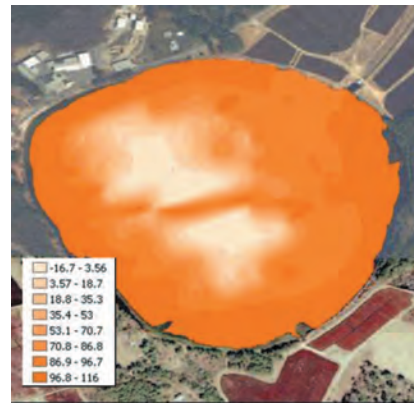
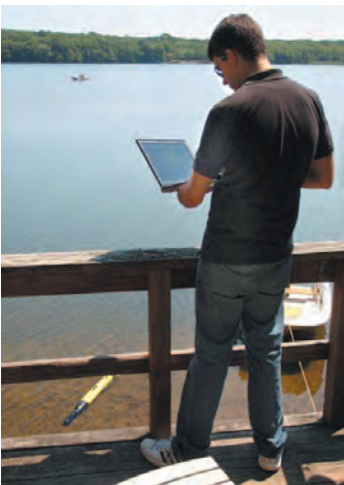
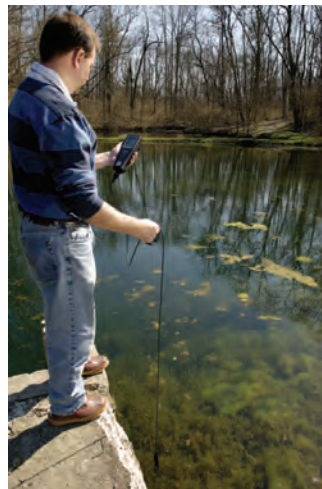
### How YSI Serves the Dairy Industry

YSI provides a comprehensive service which will help you comply with waste discharge requirements. A trained technician will visit the field site with the equipment and generate high-resolution maps of the lagoon.

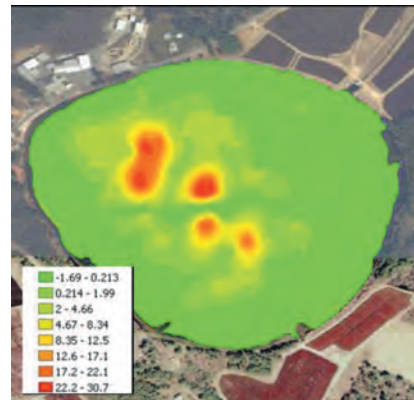
For more than 60 years, YSI, an employee-owned company, has pioneered the development of high-quality instrumentation for use in natural waters. To meet the need for improved environmental monitoring, YSI provides reliable sampling and turn-key monitoring solutions and accurate data.

Our rugged sensors and monitoring instruments are field-proven for applications such as:

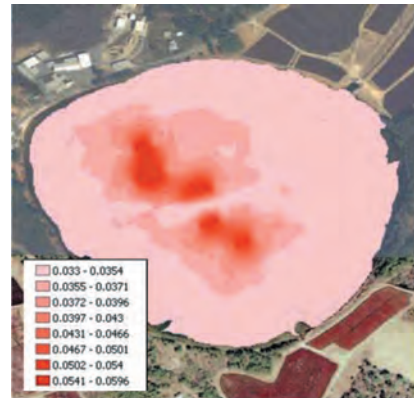
- Discharge
- Lakes & Ponds
- Rivers & Streams
- Groundwater
- Fish farming
- Stormwater & Runoff
- Wastewater
- Wetlands



Lagoon water quality - Dissolved Oxygen



Lagoon water quality - Chlorophyll



Lagoon water quality - Specific Conductance