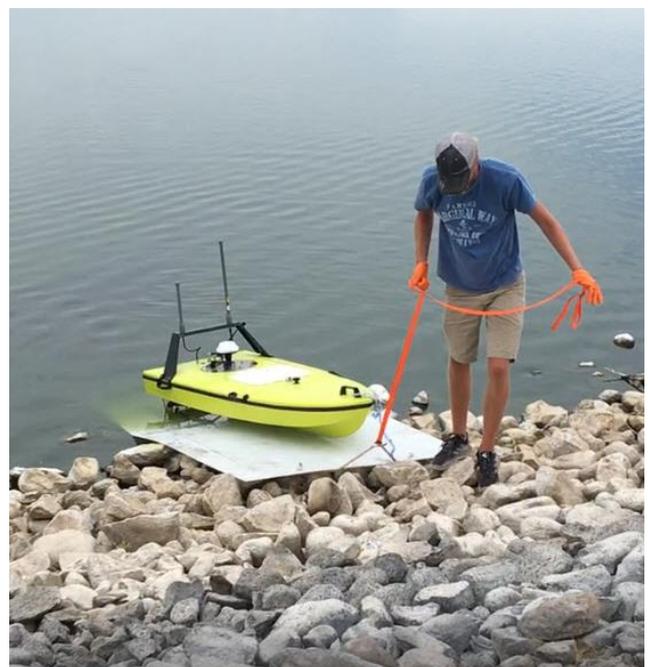




CEE-USV™ Monitors Sludge Reduction in Minnesota Effluent Lagoons

Wastewater lagoons throughout Minnesota and nearby states are getting regular CEE-USV™ visits courtesy of chemical treatment experts TEAM LAB Chemical (Detroit Lakes, MN). Considering the very high cost of hazardous waste disposal, effective management of sludge can be a huge cost saving for operators. In addition to being able to provide detailed maps of accumulated sludge, TEAM LAB use their CEE-USV™ to monitor digestion of organic matter facilitated by treatment with their T195 Mega Bugs Plus program. About 130 annual USV surveys are undertaken to monitor lagoon performance and any ongoing treatment in place.

Wastewater lagoons are used in effluent treatment by holding water for a certain period of time to allow natural and engineered processes to remove contaminants allowing the water to be discharged. Lagoons are often aerated to encourage aerobic digestion of organic matter and chemical treatments may be used to help digest sludge. As disposal costs of accumulated hazardous sludge are high, reducing sludge buildup is a desirable outcome of management programs. Surveying the sludge is useful to understand buildup over time but using a manned boat is not ideal from a



CEE-USV™ launch and retrieval over rip rap.

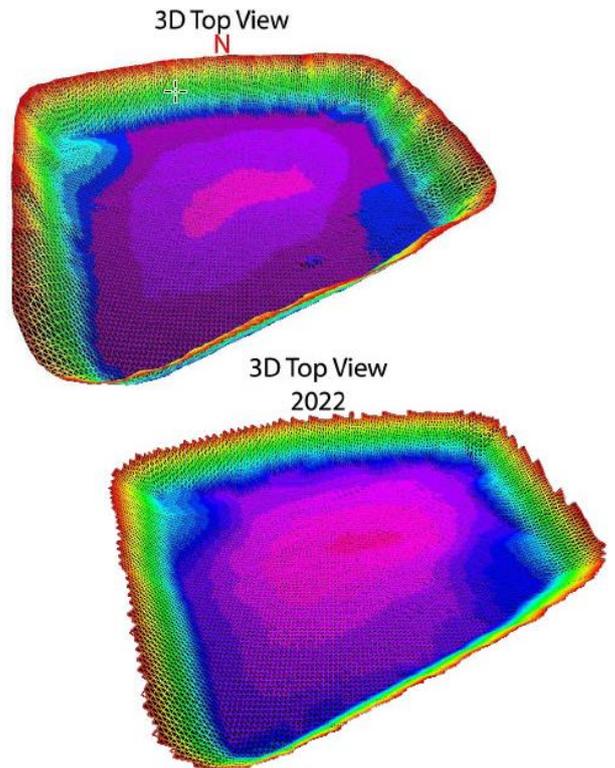
health and safety perspective. Also, it is often hard to launch and recover a large heavy boat in the lagoons where the slopes are steep and rocky. Sludge monitoring is often limited to discrete manual “sludge judge” measurements at a few points in the lagoon leading to a poor understanding of the actual sludge buildup. The CEE-USV™ overcomes these issues.



Surveying from the shore with real time display.

TEAM LAB Chemical developed a lagoon bathymetry program based on their CEE-USV™ with Hydromagic mapping software. The shore operator drives the USV along a pre-set line plan for each lagoon, and in combination with a shoreline boundary a matrix grid of the lagoon is generated. The matrix provides a 3D view of the lagoon, useful for operators but most importantly it allows an accurate calculation of accumulated or

removed sludge. The matrix grids may be compared from year to year, and used to evaluate the performance of sludge mitigation techniques. In the case of TEAM LAB, this is primarily the addition of specialized bug treatment programs such as T195 Mega Bugs Plus. These treatments enhance natural digestion of sludge and effects can be very pronounced – sludge volumes may be reduced by up to 80% with potentially huge disposal cost savings.



Hydromagic 3D Matrix grid of a wastewater lagoon.

As the program expands, more lagoons will benefit from annual repeating surveys although already the TEAM LAB field crew are conducting about 130 surveys each year per summer season.

TEAM LAB chemical: www.teamlab.net