Geotextile Tube Dewatering for Efficient Lagoon Sludge Removal

California, USA

View from dredge in Dewatering operation

OBJECTIVE

A wastewater treatment facility in North Central California needed to remove accumulated municipal wastewater sludge from its settling lagoons to create space for additional settling and promote percolation. WaterSolve recommended using geotextile tubes for dewatering the extracted solids. A dredge was selected as the method for removing the solids, ensuring an efficient and effective process. WaterSolve supplied all the required skilled technicians and equipment to successfully complete the project.

CHEMICAL CONDITIONING

After receiving several samples of lagoon sludge from the site, WaterSolve's laboratory technicians conducted thorough bench-scale testing to determine the most effective dewatering solution. Their analysis identified Solve 216B as the optimal choice for dewatering the material. This product was selected due to its ability to produce high-quality flocculation, which resulted in the formation of dense, easily dewatered solids. Additionally, Solve 216B was noted for its ability to generate a clear filtrate, demonstrating its efficiency in both the dewatering process and water quality improvement.

CHALLENGE

The work area at the site was notably compact, which presented a challenge in determining the best locations for deploying the geotextile tubes. WaterSolve's team carefully assessed the spatial limitations and the layout of the site to devise an effective plan. This involved considering factors such as access points, terrain, and the need for safe movement of equipment. After thorough evaluation, WaterSolve selected geotextile tubes in sizes that were ideally suited to the available space. This thoughtful selection allowed for the maximum possible volume of sludge to be removed from the lagoons, ensuring both efficiency and safety while making the most of the allotted area.

WaterSolve LLC

APPLICATIONS & PRODUCTS –
Polymers and Geotextile Tubes
Polymer Feed Systems
INDUSTRIES SERVED –
Municipal
GEOTEXTILE TUBE CONTAINERS
DEWATERING
COMPLETE SOLUTIONS
TURNKEY PROJECT MANAGEMENT

THE SOLUTION

Through careful planning, detailed analysis, and precise measurements, WaterSolve delivered a comprehensive and efficient solution for the city's lagoon sludge removal. The team successfully contained the entire volume of lagoon sludge within custom-sized geotextile tubes, ensuring a secure and effective dewatering process. By selecting the ideal tube sizes based on the available space and the volume of material to be removed, WaterSolve optimized the dewatering capacity while minimizing any potential risk of spillage or contamination.

WaterSolve also provided the public utility district with comprehensive dredging reports, which included a detailed breakdown of the areas and volumes of sludge removed, along with pre- and post-dredging surveys to document the progress. These reports gave the utility district a complete and accurate picture of the project's scope, including precise measurements of the amount of material dredged and how effectively it was dewatered in the geotextile tubes. The detailed surveys also allowed for comparison before and after the dredging process, confirming the volume of material removed and the improvements made in lagoon capacity.

A total of approximately 34,000 cubic yards of biosolids were successfully removed from the four lagoons that were dredged. With this large volume of material extracted, the wastewater treatment plant now has significantly more capacity for further settling and percolation. This increased space will allow the plant to continue operations more efficiently, improving the overall treatment process and reducing the risk of future operational disruptions. The removal of these biosolids not only enhances the immediate functionality of the lagoons but also contributes to the long-term sustainability of the facility's wastewater management system.

Laydown area with two geotextile tubes partially filled.

Laydown area with newly deployed geotextile tube.

Dewatering of geotextile tubes.

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ENVIRONMENTAL SOLUTIONS