

CLAIMS

What is claimed is:

1. A method for 3-dimensional mapping of sediment located in a submerged structure of a water storage or treatment facility and targeted cleaning of the sediment, the method comprising:

- conducting a pre-cleaning evaluation of the structure;
- performing pre-cleaning data collection or surveying of the structure;
- mapping the pre-cleaning sediment elevation of the structure;
- calculating the pre-cleaning sediment volumes and weight in the structure; and
- removing sediment from the structure.

2. The method of claim 1, wherein service of the water storage or treatment facility is not interrupted or paused.

3. The method of claim 1, further comprising:
conducting a post-cleaning evaluation of the structure.

4. The method of claim 3, wherein the post-cleaning evaluation of the structure comprises performing post-cleaning data collection or surveying of the structure.

5. The method of claim 4, further comprising:
comparing the pre-cleaning data collection or surveying of the structure with the post-cleaning data collection or surveying of the structure.

6. The method of claim 3, wherein the post-cleaning evaluation of the structure comprises mapping the post-cleaning sediment elevation of the structure.

7. The method of claim 6, further comprising:
comparing the pre-cleaning mapping the sediment elevation of the structure with the post-cleaning mapping the sediment elevation of the structure.

8. The method of claim 3, wherein the post-cleaning evaluation of the structure comprises post-cleaning calculation of sediment volumes and weight in the structure.
9. The method of claim 8, further comprising:
comparing the pre-cleaning calculation of sediment volumes and weight in the structure with the post-cleaning calculation of sediment volumes and weight in the structure.
10. The method of claim 1, further comprising:
comparing the pre-cleaning calculation of sediment volumes and weight in the structure with the amount of sediment removed from the structure during cleaning.
11. The method of claim 1, wherein pre-cleaning evaluation of the structure includes determining suitability of the structure for mapping and cleaning.
12. The method of claim 1, wherein the pre-cleaning data collection includes measuring and analysis of water chemistry.
13. The method of claim 1, wherein the pre-cleaning calculation of sediment volumes and weight in the structure is determined by overlaying the mapped sediment elevation of the structure onto a scaled drawing of the structure.
14. The method of claim 1, wherein removing sediment from the structure further includes using a GPS to guide cleaning equipment to remove sediment based on the mapping the sediment elevation of the structure.
15. The method of claim 1, further comprising:
collecting and analyzing samples of the pre-cleaning sediment.
16. The method of claim 1, wherein data from one or more of water temperature, salinity, dissolved oxygen, pH, oxidation reduction potential and turbidity in the structure are used to determine where or to what extent to remove the sediment.
17. A method for mapping and cleaning sediment in a submerged structure of a water storage or treatment facility, the method comprising:

identifying a suitable structure;
conducting a pre-survey site inspection;
collecting water chemistry data;
analyzing the water chemistry data;
conducting a pre-cleaning acoustic survey;
mapping the sediment elevation;
creating a floor sediment elevation map;
collecting sediment samples;
analyzing the sediment samples;
generating a sediment report;
calculating sediment volumes and weight;
cleaning the structure;
separating grit from water;
conducting a post-cleaning acoustic survey;
re-mapping the sediment elevation;
calculating the volume of removed sediment; and
generating a tank cleaning report.

18. The method of claim 17, wherein the pre-cleaning acoustic survey and the post-cleaning acoustic survey are compared in the tank cleaning report to determine sufficiency of cleaning.

19. The method of claim 17, wherein the mapping the sediment elevation and the re-mapping the sediment elevation are compared in the tank cleaning report to determine sufficiency of cleaning.

20. The method of claim 17, wherein the calculated sediment volumes and weight and the calculated volume of removed sediment are compared in the tank cleaning report to determine sufficiency of cleaning.