

Delavan Lake North Inlet Dredging Project

September 12, 2011 Project Update

Progress overview: As of September 9, the dredging and dewatering contractor, JND Thomas Co., has completed approximately 78% of the work. Thus far, they have removed in excess of 35,375 cubic yards of accumulated sediment or approximately 26,000 pounds of phosphorus from within the designated dredging area.



HDR's Project Manager Peter Berrini and his team complete an on-site verification of the completed dredging work along with the JND Thomas dredging superintendent to confirm that the soft sediment is being removed to the required depths. In the photo below, Peter is discussing project progress with JND Thomas representatives that include Dennis Thomas (president), Keith Ayres (dredging superintendent) and Richard Raschke (dewatering superintendent). JND Thomas reports that the project is on schedule and should be completed in October as planned. As specified in the Project Management Plan, JND Thomas, HDR, and the Town are being updated on dredging progress and any issues that are inevitable with a project of this magnitude on a continuing and regular basis.



The dredging equipment works as close to the existing piers as water depth and hard-bottom allow.



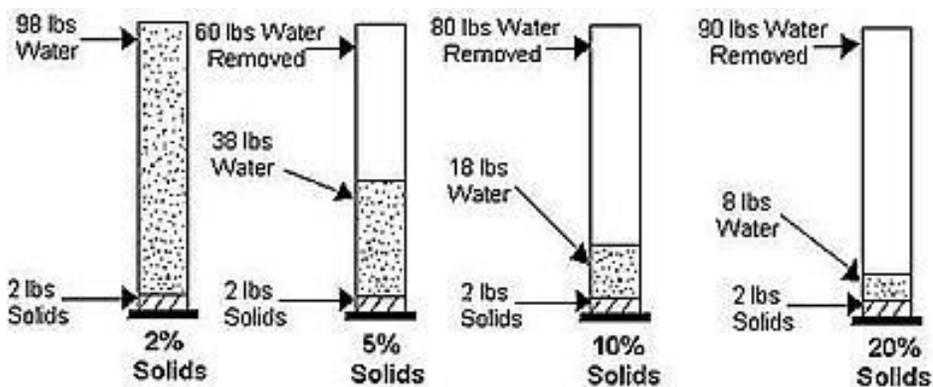
As of September 9, approximately 1,050 truckloads of material have been removed and hauled to the WDNR approved designated soil placement site by Odling Construction Co. The trucks are unloaded and the recovered soil material is carefully stockpiled within designated storage cells to control runoff and to allow for future access and beneficial reuse. Notice the vegetation growth beginning to appear in the recently placed, nutrient rich soil.



In an attempt to answer a question which was recently received in which a reader asked us to explain the apparent disparity between the number of truckloads of soil material being hauled offsite and the number of cubic yards of material actually dredged, we have provided a simplified explanation with supporting images below.

The volume of dewatered soil hauled off site amounts to a significantly reduced volume when compared to the soft, highly saturated sediment volumes measured in-situ or in place within the lake prior to being dredged. Originally, it was estimated (based on past experience) that after the dredged sediment was sufficiently dewatered to a dry, stackable consistency that would allow for loading and hauling with conventional, sealed trucks, the estimated dredging volume of 45,330 cubic yards (as measured in place within the lake) would reduce in total volume by approximately 33 percent, which would amount to approximately 30,000 cubic yards of soil to be hauled by trucks. As of September 9 when the dredging contractor was approximately 78 percent complete, the approximately 35,375 cubic yards of dredged sediment (as measured within the lake bottom) amounted to approximately 1,050 truckloads of hauled soil or approximately 21,000 cubic yards of dewatered soil. The mechanical sediment dewatering system using high pressure belt presses has surpassed the original volume reduction estimate, achieving a 40% reduction over the original volume.

The proportion of solids and water in lake sediment varies depending on the physical characteristics of the sediment and the hydrology and morphometry of the lake environment. Undisturbed core samples of the Delavan Inlet sediment were found to range from 25 to 30 percent solids and 70 to 75 percent water. The in-situ or in-lake concentrations are important because the volume occupied by water is inversely proportional to the solids content. Onsite tests have indicated that the dewatered soil contains approximately 60 percent solids or 40 percent water versus pre-dredging in-situ concentrations of only 25 to 30 percent solids. The photos below provide a visual representation of the soil/sediment consistency starting with the very saturated and soupy lake sediment within the bucket in the center of the page. The images of the slurry mixture in the glass jar represent the mixture being pumped directly into the dewatering system, followed by photos of the soil after being dewatered and then and being hauled away. The figure below shows how a measured volume can be reduced simply by removing water, which also occupies void spaces in the sediment.



Keep checking this web site for project updates.

<http://www.townofdelavan.com/inlet-dredging-project>