

UNDERWATER BUTTRESS CONSTRUCTION

Project Scope Highlights

- Hydraulically dredge 50,000 Cubic Yards of CCR material to construct buttress
- Placed all material within tolerance below basin water elevation
- Removed phragmites utilizing amphibious excavator
- Conducted weekly hydrographic surveys to track progress
- Provided strict environmental controls regarding TSS and spills
- Maintained a strict three month schedule to meet the start of the state mandated basin closure project



Remote Controlled Survey Boat

Project Overview

As a precursor to a CCR basin closure, it was necessary to remove the ponded water located within the CCR basin and adjacent to an existing landfill. To Improve the landfill slope factor of safety, the installation of an underwater buttress was required as part of the pre excavation project setup. The installation techniques for this buttress were left up to the contractor's discretion. Trans Ash selected dredging of an adjacent delta area as the means of providing the necessary buttress material.

Project Challenges and Solutions

The design, schedule and environmental factors created a unique set of challenges:

- The buttress included a design slope of 12:1 installed underwater to strict tolerances. Typically work such as this would be done in dry conditions but due to slope stability concerns dewatering of the pond was not permissible. Trans Ash selected dredging as the means of excavation and placement to meet these challenges.
- Due to regulatory dates, the client had a very aggressive schedule, with approximately 3 months from construction start to In service. With a fleet of owned equipment and qualified available personnel, Trans Ash was able to mobilize to the site quickly and complete the project within the allotted time frame.
- At the time of mobilization, no material was available to dredge due to phragmite overgrowth that covered the available borrow material. An amphibious excavator was utilized to remove phragmites safely and expose a bank of material that could be dredged to create the buttress.



Work Barge for Discharge Access

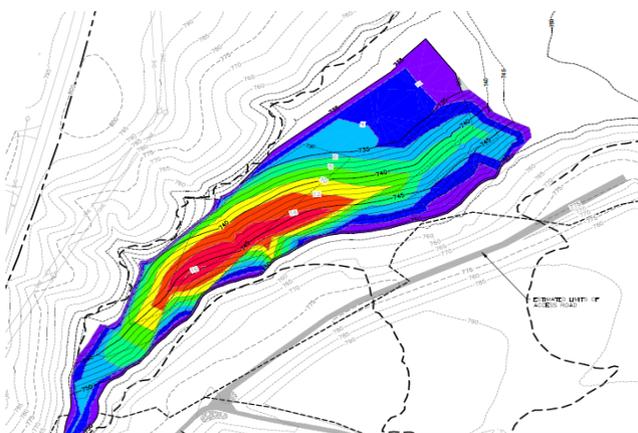
- Due to environmental restrictions strict water quality standards were put in place. As to not disrupt the water quality in the main ash pond a closed loop system was created where the entire work area was within an isolated body of water. This also removed the need for make-up water and costly return water pumping.
- Dredging projects typically include dredging to a predetermined grade and are typically completed using a GPS guided dredge. This project's unique nature required fill material placement to a predetermined grade. Solutions to this challenge included:



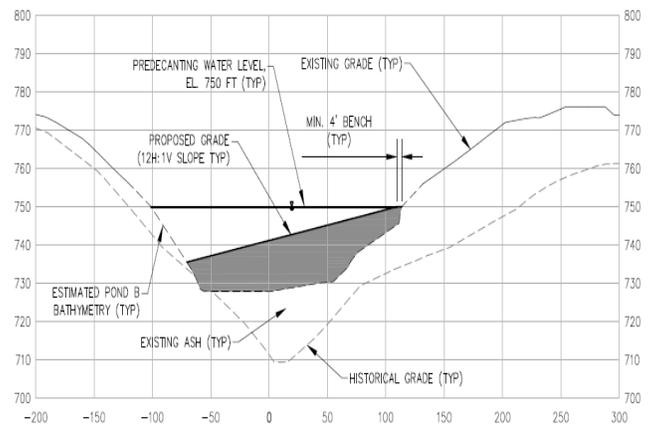
Grid System for Placement

- Use of GPS and a grid system to track the amount of fill required in an area and to monitor the fill placed daily.
- A system of cables and snatch blocks was utilized to easily position the discharge pipe in the fill area. A work barge was also permanently stationed at the discharge pipe for easy access.
- Weekly Hydrographic surveys to verify grades were being met.

“The Trans Ash method for buttress installation eliminated the need to dewater the basin, limited the effect on water quality, and ensured the buttress was constructed within tolerance, on time, all while reducing the cost.”



Buttress Fill Map



Buttress Cross Section