

Ash Pond Dewatering Solutions

Environmental - Case Study

Background

In the early 1950s a Department of Energy facility began producing materials for national defense and space programs. For decades the plant utilized a coal-fired powerhouse to power much of its production. Coal ash, a by-product of energy production, was pumped into holding basins for collection and control. After decommissioning the powerhouse, 90-acres of contaminated ash needed to be remediated to reduce environmental exposure and the potential risk of ground water leaching. Part of the cleanup required 1.3M yards of ash to be removed from the holding basins and consolidated into onsite landfills. These landfills are then capped with geo-synthetic liners, dirt, top soil and grass to prevent rainwater from infiltrating

The Challenge

A leading environmental remediation contractor was tasked with excavating the ash and consolidating it within a landfill and constructing the final landfill cover system. Eighty thousand cubic yards of ash and contaminated dirt were removed from one holding basin, dewatered, stabilized and transported to the on-site landfill. To ensure the treated ash met the landfill spec and to prevent future failures, a 4-foot roll test was performed to test grading and compaction.

The ash was extremely wet when removed from the basin and unique characteristics made it difficult to stabilize per the landfill specification. As the program stretched into fall and winter, rain and cold made the material more difficult to dewater and stabilize, ultimately impacting production.

To meet a tight timeline, the contractor needed to achieve summer-like production levels in the cold, wet winter conditions

Executive Summary

- > After closing a coal-fired powerhouse, the Department of Energy was left with 1.3M yards of contaminated ash
- > A leading environmental remediation contractor was selected to excavate & consolidate the ash into two on-site landfills
- > As the project entered cold and wet winter months, the contractor saw a decrease in production capacity as dewatering the wet ash became impossible
- > To achieve the grading and compaction requirements of the landfill, they needed a solution to quickly dewater & stabilize the ash
- > In their search for a drying reagent, the remediation contractor discovered Calciment, a product that contains a mixture of calcium oxide and pozzolans, to quickly dewater the ash
- > Cementitious properties provide strength gains for easier grading and compaction
- > The contractor selected Calciment delivered in one ton super sacks which were attached to the bucket of an excavator for spreading and mixing
- > The results were fast and significant – two hours after applying Calciment, the ash was dry, and within 24 hours it passed a 4-foot roll test for grading and compaction



Calciment® accelerated the drying process allowing the contractor to maximize production for on-time, under budget project completion.

Solution

The contractor needed to bring production to full capacity, finding a way to quickly and easily dry and stabilize the ash regardless of ambient conditions. The drying agent needed to be easily spread and mixed utilizing equipment readily available. Most importantly, the drying method had to improve workability to prepare for landfill placement.

In their search for a fast and effective dewatering agent the contractor discovered Calciment, a product that has been used in environmental remediation for decades to dewater contaminated soils and sediments. Calciment contains a mixture of calcium oxide and pozzolans to quickly dewater contaminated waste. In addition, cementitious properties provide strength gains for easier grading and compaction. Calciment is available in a variety of packaging and shipping options to accommodate specific job site requirements.

... Calciment: Easy to Apply, Fast Drying, Long-Term Strength Gains

Implementation

Calciment packaged in one ton super sacks was selected because the product could easily be applied and mixed with equipment already on site. The use of super sacks also eliminated potential dust on the job site. The super sacks were attached to the bucket of an excavator for placement and mixing directly in the watery ash. By eliminating the need to bring in special equipment, the contractor was able to quickly implement the solution.

...Within minutes, Calciment began to dewater the ash leaving a solid material that was more stable and easier to handle

Results

The results were fast and significant – within two hours of applying Calciment, the ash was dry and within 24 hours it met the landfill strength requirements. Accelerating the drying process allowed the contractor to finish the project on time and under budget.

... Calciment: Easy to Apply, Fast Drying, Long-Term Strength Gains

Continued Success!

Impressed with the results, the contractor expanded their use of Calciment to additional projects. Because the new jobs are larger projects, the contractor leverages pneumatic and dump trucks as well as on-site storage to ensure constant supply. To increase efficiency and application consistency, injector forks are also used to add and mix Calciment into the ash.



Coal Ash Holding Basin Excavation



Calciment Is Applied to Stabilize the Underlying Sub-base