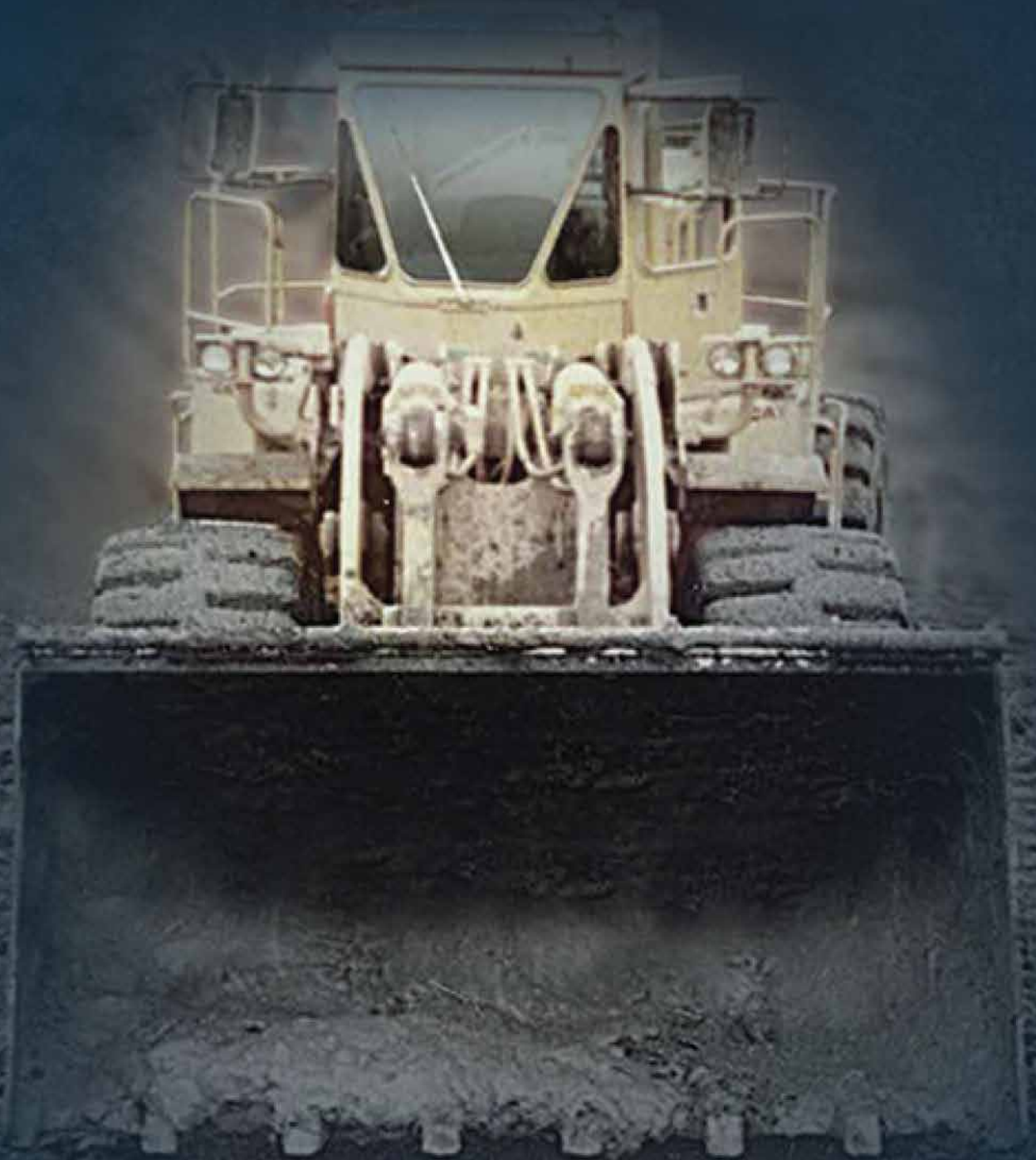


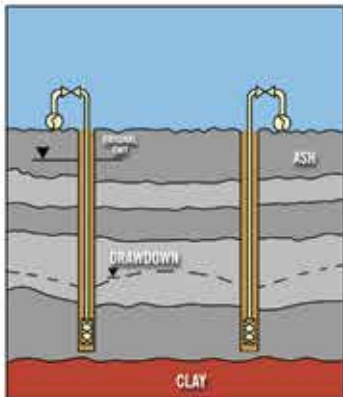
MORETRENCH



CCR SPECIALTY SERVICES

ASH POND DEWATERING & WATER TREATMENT

Lowering the water content of ash pond materials by pre-drainage dewatering effectively increases its cohesion and shear strength, allowing stable, near vertical cuts to be made for mass excavation with conventional equipment. The primary methods of ash dewatering are wellpoints, deep wells and wick points.



WELLPOINT SYSTEM

► WELLPOINTS

The basic wellpoint system consists of the wellpoints themselves, header piping, and a centrally located pumping station. Depending on the area to be dewatered, the system can consist of just a few wellpoints and a single pumping station, or many thousands of wellpoints and multiple pumps. Wellpoints are very effective in soils and ash of low hydraulic conductivity and when close spacing is required.



DEEP WELL

► DEEP WELLS

Deep Wells are equipped with individual submersible pumps and can be installed to much greater depths than wellpoints. A deep well system is best suited to material of high hydraulic conductivity such as bottom ash and where permeable material extends well below the bottom of the excavation.

► WICK POINTS

Wick points provide cost-effective ash drainage and consist of a geotextile filter fabric wrapped around a molded plastic core. The fabric is specially designed to allow water drainage while retaining fine-grained fly ash particles. Wick points are well suited when flow rates are low, longevity is not a concern, and rapid installation is required.

► GROUNDWATER TREATMENT

Moretrench's on-site mobile treatment plants are customized to treat the specific contaminants present in the water before discharge in accordance with local, State and Federal requirements.



SEWARD GENERATING STATION Johnstown, Pennsylvania

Pre-drainage of an inactive ash pond to facilitate mandated closure was accomplished by the installation of a system of wellpoint lines installed across the pond and also around the entire perimeter. Ash removal was begun approximately five weeks after groundwater pumping was initiated and completed some five weeks later. As a result of the dewatering program, the stability of the ash was such that excavation could take place with rubber tire-mounted equipment.

DAM & LEVEE REPAIR & REHABILITATION

A number of issues can affect the performance of earthen, rock-fill and concrete ash impoundments. Even relatively low-volume seepage beneath or through the face of dams and levees can lead to instability and, in extreme cases, collapse. Settled or deteriorating utilities, pipes and outfall structures may require support. Ground improvement or anchorage may be required to meet seismic codes. Moretrench has a range of grouting and groundwater control techniques to effectively address these issues.



JET GROUTING FOR LIQUEFACTION MITIGATION

► JET GROUTING

Jet Grouting utilizes high pressure, high velocity jets to hydraulically erode, mix and partially replace the in situ soils with cementitious grout, creating a soil-cement product of high strength and low hydraulic conductivity. For dam and levee rehabilitation, jet grouting may be used to create a groundwater barrier to improve liquefiable soils or to underpin utilities, outfall structures and pipes.

► CURTAIN GROUTING

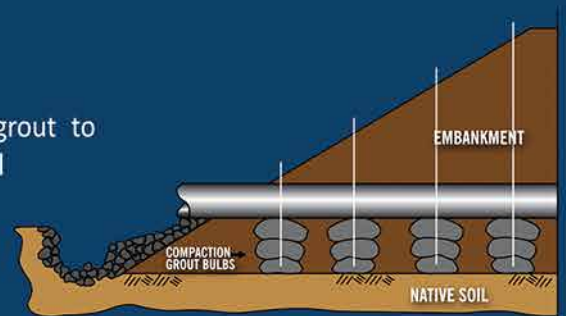
Curtain grouting is the filling of fractures and fissures in the underlying rock formation with cementitious grouts injected through closely spaced grout holes to reduce seepage.

► PERMEATION GROUTING

Permeation grouting utilizes low viscosity chemical or cement grouts injected into the pores of granular soils to increase their strength and cohesion or decrease hydraulic conductivity for groundwater control. This technique is well suited to the remediation or improvement of earthen embankments.

► COMPACTION GROUTING

Compaction grouting is the pressurized injection of mortar-like grout to displace and densify the surrounding soils. This technique is well suited to liquefaction mitigation and to control settlement of utilities, outfall structures and pipes.



COMPACTION GROUTING FOR SETTLEMENT CONTROL

► ANCHORS

Permanent tieback and vertical tiedown anchors are effective in increasing dam stability to meet seismic codes.



TOE DRAIN

► TOE DRAINS AND RELIEF WELLS

Permanent toe drains and relief wells lower the phreatic surface within earthen embankments to improve overall stability.

CUT-OFF & CONTAINMENT BARRIERS

Perimeter cut-off or containment to prevent off-site migration of contaminated groundwater and facilitate ash pond closure can be accomplished by a range of specialty geotechnical methods. Selection of the most appropriate option is dependent on the subsurface conditions, site-specific project requirements, and cost considerations.

▶ SLURRY TRENCHES

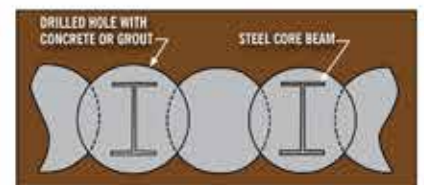
Soil-bentonite slurry trenches are constructed by excavating and keying into a suitable cut-off stratum under a slurry to maintain sidewall stability. The excavated material is mixed with bentonite and returned to the trench, displacing the slurry and completing the cut-off. When additional strength is required, cement may be added to the backfill.



SLURRY TRENCH GROUNDWATER CUT-OFF

▶ GROUTED CUT-OFFS

Grouted groundwater cut-offs can be constructed by the installation of overlapping jet grout columns or thin panels to an impermeable stratum. Jet grouting can be performed around existing utilities or other subsurface structures.



SECANT PILE INSTALLATION

▶ STRUCTURAL CUT-OFFS

Secant pile walls are constructed by the installation of slightly overlapping concrete piles in a primary/secondary sequence. Where earth retention is also required, the secondary piles are reinforced with steel cages or H-beams.

ADDITIONAL SERVICES

Moretrench's services also include ground improvement, earth retention, deep foundations, and ground freezing. This wide range of in-house expertise allows the company to offer turnkey solutions to address multiple geotechnical challenges at an individual storage facility, often under a single contract.

DANIEL ELECTRIC GENERATING PLANT Jackson County, Mississippi

A perimeter system of deep wells, together with shallow interior wells, successfully fully dewatered an underlying aquifer to facilitate removal of a highly stratified mix of bottom ash and fly ash and allow installation of a liner and ash replacement. The system pumped 4,500 gallons per minute for over a year, with ash excavation able to be performed in tall vertical lifts and stored dry during pond lining. The dewatering project resulted in faster, safer excavation and a much smaller storage footprint than would be required for wet ash.



No One Has Seen More...

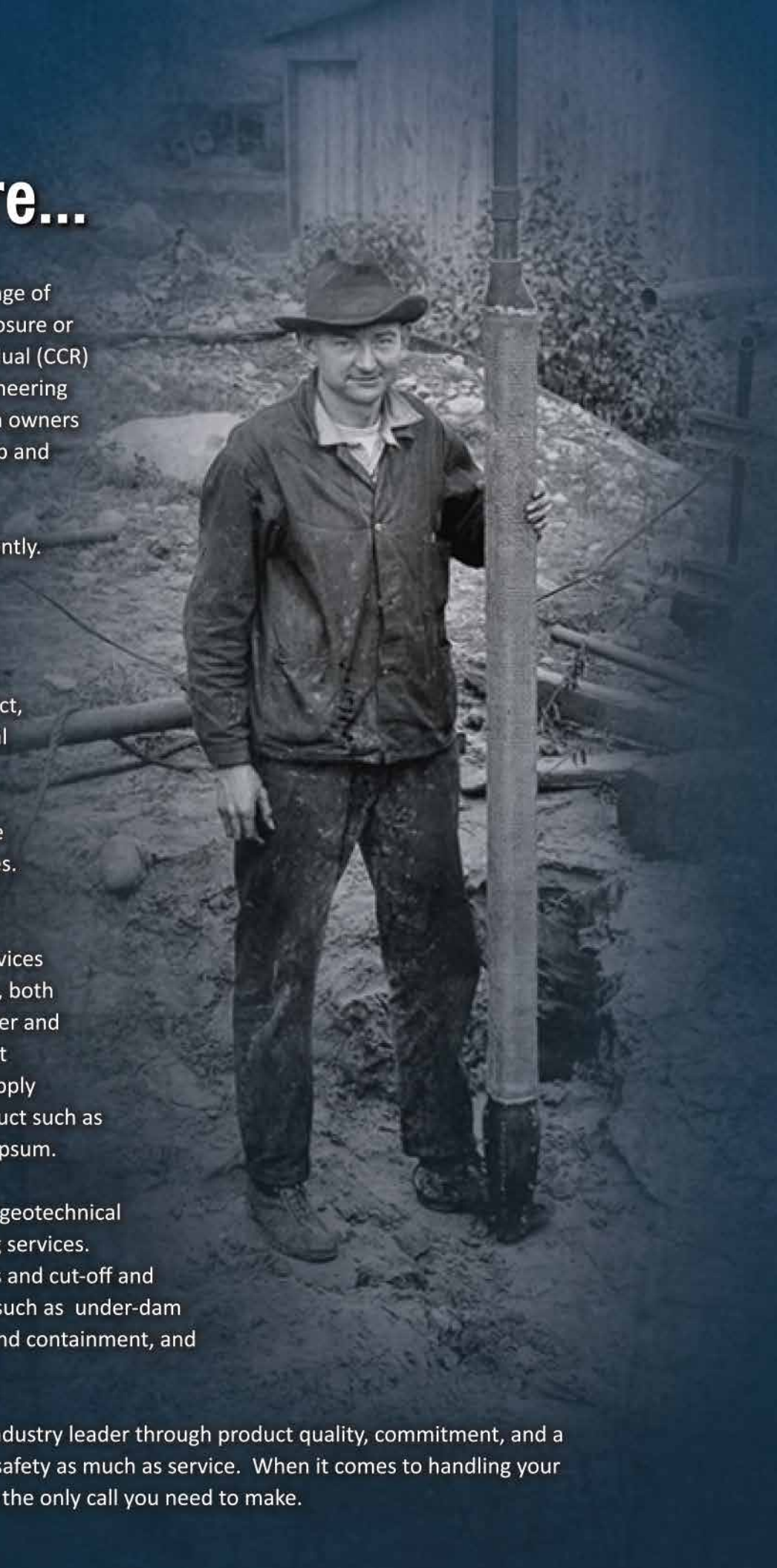
Moretrench offers a comprehensive range of services to cater to the challenges of closure or rehabilitation of Coal Combustion Residual (CCR) storage facilities. Our experienced engineering and operations teams work closely with owners and their general contractors to develop and implement the customized solution or solutions required to meet the specific project objectives effectively and efficiently.

At Moretrench we've been resolving challenging geotechnical problems for the civil, industrial and environmental industries for more than 90 years. In fact, Moretrench pioneered the first practical dewatering wellpoint in 1924, revolutionizing the approach to deep excavation and paving the way for more efficient and safer construction practices.

The wellpoint and the deep well, also developed by Moretrench, are core services that have been applied countless times, both nationally and internationally, to dewater and thus stabilize saturated soils for efficient handling. The principle has proven to apply equally effectively to industrial by-product such as Coal Combustion Residual (CCR) and gypsum.

Moretrench also offers a wide range of geotechnical methods to complement its dewatering services. These include both grouting techniques and cut-off and containment methods for applications such as under-dam seepage control, groundwater cut-off and containment, and support of existing utilities.

We have earned our reputation as an industry leader through product quality, commitment, and a corporate philosophy that emphasizes safety as much as service. When it comes to handling your CCR issues, a call to Moretrench will be the only call you need to make.



MORETRENCH

No one has seen more.™

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