

**GROUND CONTROL PLAN
HIGHWALL MINING
AMENDMENT**

MINE NAME
MSHA ID NO. 00-00000

DATE

Brook 10a

Mine Name

MSHA ID 00-00000

Highwall Mining Amendment

Introduction:

The following is a plan amendment for highwall mining at the *Mine Name*. *Name of highwall miner to be used*.

Additional Equipment Required for Highwall Mining

Equipment List

One Launch Vehicle manufactured by ICG ADDCAR Systems, LLC

Minimum of thirty (30) conveyor cars manufactured by ICG ADDCAR Systems, LLC

One Stacker Conveyor, manufactured by ICG ADDCAR Systems, LLC

One JOY 14CM Continuous Miner modified by ICG ADDCAR Systems, LLC

One DBT Dash-4 Continuous Miner manufactured by ICG ADDCAR Systems, LLC

One Water Tanker manufactured by ICG ADDCAR Systems, LLC

Dollies manufactured by ICG ADDCAR Systems, LLC

Fork/Wheel Loaders manufactured by Caterpillar

Air Compressor

Electric Generator

Miscellaneous Support Equipment

Equipment Dimensions

Launch Vehicle – approximately 25 ft wide and 86 ft long

Conveyor Cars -10.5 ft wide and 51.25 ft long

Stacker Conveyor - 25 ft wide X 65 ft long with discharge height of 21.5 ft

JOY 14CM Continuous Miner – 11.5 ft wide, mining height range 4 – 11.2 ft

Water Tanker – approximately 8 ft wide X 40 ft long

Dollies – various sizes up to 21 ft wide

Geologic Information:

[Reference the existing accepted ground control plan](#)

Operational Safeguards:

Where there is significant deterioration of the highwall, or the catch berm has accumulated a significant amount of material, the highwall Miner Launch will be positioned away from the highwall a minimum of 50 feet or at least $\frac{1}{2}$ the height of the highwall, whichever is greater.

If failure to control the highwall occurs such as the existence of overhangs, loose material, unconsolidated rocks, material falling into the pit, movement in the wall, or blasting practices have failed to result in a clean and stable highwall, and corrective action cannot be taken to eliminate the existence of these conditions, the affected area will be barricaded to prevent persons from being exposed to the conditions. If instability has resulted from the highwall design, the plan will be revised to safely control the highwall and provide for safe conditions. The revision will identify the reason for revising the plan so as to alert MSHA to the conditions.

[There are no active or abandoned underground mines in the vicinity.](#)

The continuous miner will not remain in a hole for an extended period of time during idle periods.

Web and Barrier Pillar Design:

See attached Feasibility of Highwall Mining

See attached drawings

The minimum web pillar width for the active panel will be recorded in a book approved by the Secretary.

Highwall Mining Procedures:

In all cases, all highwall mining operations at the Coal Hollow Mine will be performed in accordance with the requirements outlined in 30 CFR regulations Subpart P – Auger Mining, Sections 77.1500 thru 77.1505 and any other applicable MSHA regulations.

Mining Sequence – Mining will occur at the [Mine Name](#). All mining will be done in the [name of coal seam](#).

Roof & Floor Stability – There is a potential for weak roof due to a carbonaceous shale/mudstone. Because of the potential as a safety factor roof coal will be left to help with support. The amount of roof coal has already been determined. The floor is a sandstone base so additional coal will not be left on the floor.

Hole Alignment – New entry alignment will be maintained by survey and/or GPS control. Web and barrier pillar thickness will be maintained via the unit guidance system on the Highwall Miner. Coal mining height will be governed by a gamma ray monitoring system. Mining will not take place if the guidance system is not operational.

After the continuous miner and #1 push beam are underground and proper alignment is obtained, the Blast shield will be lowered into place. If an adjacent entry is breeched, mining will cease in that entry and the continuous miner will be moved to the next projected hole.

Hole Surveying and Mapping -

- a) Actual cuts will be surveyed and cut maps will be updated with current information for the highwall mining crew. Cut maps will be provided to the mining crew for the panel being currently mined and for the next panel to be mined (which may be subject to change). The working cut maps shall be located on or near the launch vehicle. A record book shall be located at the launch vehicle and shall contain the dates of cuts, the mined heights, the width of the web and barrier pillars, and the completed lengths of cuts.

- b) In both of the surveying and mapping requirements, the cut maps will be in accordance with the design criteria. The web thickness, barrier thickness, and maximum cut height will be included on the cut maps.
- c) A record of the cut maps of mined panels shall be kept on record for examination by MSHA for the duration of the highwall mining project. Any highwall stability issues will be indicated, including web pillars that are inadvertently developed smaller than the design.

Coal Stockpiling - Coal mined by the Highwall Miner will be discharged out the back and piled on the pit floor where it will be maintained by loaders & dozers. Coal loading and haulage from the pit floor stockpile will be via a loader and haulage trucks. Haulage trucks being loaded from the stock pile will maintain a distance of at least 25 feet from the highwall.

When a highwall has been previously mined by highwall methods, and after the holes have been plugged and coal has been loaded from the location, a minimum 2 foot tall catch berm shall be maintained at the location a minimum distance of 25 feet from the highwall to restrict access to the highwall. Where practicable, the stockpile should be located where mining entries in the seam has not yet taken place and should be a minimum of 25 feet from the highwall.

When a catch berm does not exist between the loader and the highwall, coal loading will be done with loaders facing the highwall when practicable.

Hole Closure – After the mining process has been completed and the machinery has been moved to a new entry, a maximum of 5 entries will remain open. These 5 entries will be the closet entries to the active entry. They will be used for observation of the web pillars for any sign of movement. Spoil or other suitable material will be hauled to open holes and placed over the mouth of the opening.

No person shall be permitted to enter a highwall miner opening unless approved by MSHA.

Openings will not be used for storage of materials or equipment.

Recovery Procedure – In the event the continuous miner equipment becomes stuck in an hole, there are several different techniques to retrieve the system. Because of a case – by case nature it is not feasible to have a specific plan. MSHA District Manager approval will be obtained for any recovery procedure.

Inspections – A certified person will inspect the highwall and spoil faces in an active work area before highwall mining commences, and on – shift examinations will be conducted of the area as needed. The inspection will consist of the highwall and surrounding area. An inspection will be conducted at the openings for movement in the web pillars. The results of the inspections will be recorded in a book approved by the Secretary.

The inspection shall include an area on either side of the mining cut equivalent to the height of the highwall. The highwall miner crest will be visually inspected from a position that assures the safety of the inspector. The highwall miner crest area should also be visually inspected for a distance equal to the height of the highwall back from the crest.

Blasting – For the most part, blasting will not occur within 1,500 feet of the front of the highwall mining launch. If there is a need for an exception to this procedure, highwall mining operations will cease until the blast is completed. The highwall will then be inspected by a certified person for potential damage incurred by the blast before the mining process begins.

If blasting occurs within 1,500 feet of the highwall miner the following procedure will take place:

- 1) The highwall miner employees will be moved away from the blasting area to a safe area.
- 2) The employees will remain out of the blast area until an exam has been conducted by a certified person.
- 3) The employees will return to the work area when the area has been cleared of any hazardous conditions.

Electrical Components – All underground electrical components will be housed inside explosion proof enclosures and shall be maintained in explosion proof condition.

Conveyor Car Coupling – The push beams should be coupled with a latching arm and a keeper pin to keep the latching arm from coming uncoupled underground. If the latching arm or keeper pin shows signs of excessive wear the arm and pin will be replaced.

Launch Vehicle Maintenance/Repairs – The FOPS structure over the Launch Vehicle is designed to comply with 30 CFR 77.403. Routine maintenance and repairs to the Highwall Mining equipment may be made under the FOPS, including bit changes on the continuous miner. Major repairs to the mining equipment may be completed during daylight or nighttime hours. Adequate lighting shall be provided for work areas as per 30 CFR 77.1504(e). The machine will be backed out away from the highwall the distance of at least 50 feet.

Ventilation – Methane will be monitored continuously on the continuous miner. The continuous miner will be equipped with a scrubber, water sprays and a methane monitor with dual sensors. The methane monitor is equipped with digital displays indicating percentage of methane/air mixture and a warning light. The light will flash when 1% methane is encountered. Both the light and the digital readout are displayed on a monitor in the operator's compartment. The methane monitor is designed with an automatic shutdown system that will de-energize the miner if methane levels reach 2% or more. If elevated methane levels are encountered the following procedure will be followed:

- 1) When the light flashes, indicating 1% methane, the cutter head will be lowered to the center of the seam and the machine will be shut down, except for the scrubber. All personnel will be removed from the immediate area. A methane examination will be conducted at the cut opening. The auger system will remain running. Internal combustion engines will not be operated in the vicinity of the highwall mining opening.
- 2) Methane levels will be monitored in the operator's compartment. When the methane levels have dispersed at the cutter head, another methane

examination will be conducted at the opening. When methane levels are .25% or less, work will resume.

- 3) In the event that methane levels are high enough to shut down the machine (2%), all equipment will be de-energized and removed from the cut by using the propulsion cylinders on the launch vehicle. The cut will be abandoned.
- 4) When a methane test is taken at the cut opening, the person performing the test will remain under the protective canopy.
- 5) The methane monitoring sensors on the mining machine will be visually inspected and cleaned before each cut.
- 6) The methane monitor will be calibrated at least every 30 days as per MSHA regulations.