CAI-2017-04

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Surface Coal Mine
(Auger Operation)

Fatal Fall of Face, Rib, Pillar or Highwall Accident
March 30, 2017

GHM #51
Green Hill Mining, Inc.
Rockholds, Whitley County, Kentucky
ID No. 44-07079

Accident Investigator

David A. Faulkner
Mine Safety and Health Inspector

Originating Office
Mine Safety and Health Administration
District 7
3837 S. U.S. Hwy. 25 E, Barbourville, Ky. 40906
Jim W. Langley, District Manager

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PHOTOGRAPH OF ACCIDENT SCENE

OVERVIEW

On Thursday, March 30, 2017, at approximately 2:05 a.m., a highwall fall accident occurred at the Green Hill Mining, Inc., GHM #51 coal auger operation. Joseph W. Partin, a 33-year-old second shift foreman/auger operator with 8 years of mining experience received fatal injuries when he was struck by a rock that fell from the highwall (see Appendix C). The auger helper was an eye-witness to the accident.

GENERAL INFORMATION

The Green Hill Mining, Inc., GHM #51, is a coal auger operation that began on July 18, 2005. At the time of the accident, the auger was located at the Alden Resources, LLC, Colonel Hollow Mine, MSHA ID No. 15-19508, a surface mine on Tyes Ferry Road, Rockholds, Whitley County, Kentucky. GHM #51 had 5 employees and operated two production shifts daily, five to six days per week. The active work area was identified as the Jellico auger pit which is in Pit #1. The auger produced 400 tons of coal per day from the Jellico coal seam. Coal was mined with an auger machine and stockpiled on site. The coal was transported away from the mine site by trucking companies contracted through Alden Resources, LLC, the surface mine operator.

The principal officers for Green Hill Mining, Inc. at the time of the accident were:

Laird T. Orr, Jr. .....President
Daniel T. Orr .....Vice-President

The last regular safety and health inspection (E01) conducted by the Mine Safety and Health Administration (MSHA) was completed on November 28, 2016. The mine's Non-Fatal Days Lost (NFDL) incidence rate for 2016 was 0.0 compared to the national average of 0.73 for mines of the same type.

DESCRIPTION OF ACCIDENT

At approximately 5:00 p.m. on Wednesday, March 29, 2017, Joseph W. Partin, Second Shift Foreman/Auger Operator and Travis Kidwell, Second Shift Auger Helper, arrived together at the Jellico coal seam auger pit location. Daniel Hulsey, First Shift Foreman/Auger Operator, met Partin in the pit area to discuss the events of the first shift operations and auger drilling conditions. The first shift crew left the pit area at approximately 5:30 p.m.

Kidwell checked the engine fluid levels before starting the auger machine. Partin conducted an examination of the work area prior to starting the work cycle. Partin then positioned the auger machine near the highwall for the start of the first auger entry.

Partin drilled the auger entry approximately 224 feet deep and retracted the auger flights. Kidwell observed the cutter heads and changed one worn cutter head bit prior to starting the second auger entry. Partin then started drilling the second auger entry. At 12:30 a.m. on Thursday, March 30, 2017, Partin conducted another examination of the area and did not record any hazardous conditions. Partin then completed the second auger entry of approximately 450 feet in depth and retracted the auger flights.

Once he completed the second auger entry, Partin positioned the auger machine for the next auger entry to be mined by the day shift crew. Partin extended the front hydraulic highwall guard then stepped down to the ground between the highwall and the auger machine to change worn cutter head bits. Kidwell stood on a platform located on the right front area of the auger machine to supply bits to Partin and to watch the highwall for falling rock. Partin changed three worn cutter head bits and informed Kidwell that it was quitting time.

At approximately 2:05 a.m., Kidwell observed a small rock fall from the highwall. He shouted "watch out" just as a large rock section struck Partin. Kidwell ran to Partin to determine if the rock could be removed, it could not. He checked for vital signs and found that Partin was unresponsive.

Kidwell ran to the pickup truck, drove to the pit entrance, a distance of approximately 1,000 feet, and called 911 at 2:09 a.m. He then drove to the end of the mine access road and instructed mine security to meet emergency responders at the Rockholds Post Office. At approximately 2:15 a.m., Kidwell called Paul A. Hulsey, Superintendent, at home to notify him of the accident. He then returned to the accident scene. Kidwell was not able to perform CPR because of the victim's position underneath the rock. The volunteer fire department arrived at the accident

scene at 2:32 a.m., and Whitley County Emergency Medical Services arrived at the accident scene at 2:40 a.m. No medical assistance was given to the victim because of his position under the rock. Andrew Croley, Whitley County Coroner, arrived at the accident scene at 2:51 a.m. and pronounced Partin dead at 3:01 a.m.

INVESTIGATION OF ACCIDENT

On March 30, 2017, at 2:26 a.m., P. Hulsey called the Department of Labor (DOL) National Contact Center to report the accident. The Center notified William B. Sears, Harlan Field Office Supervisor. Sears notified Samuel R. Creasy, Assistant District Manager/Enforcement. Creasy notified David A. Faulkner, Mine Safety and Health Inspector/Accident Investigator.

Faulkner and Creasy traveled to the accident scene. Upon arrival at 4:25 a.m., Faulkner verbally issued a 103(k) order to ensure the safety of the miners and to preserve the accident scene. Faulkner modified the 103(k) order to allow the victim to be removed and conducted a physical examination of the accident scene. The Kentucky Division of Mine Safety was also at the scene and participated in the investigation. (see Appendix A).

Educational Field and Small Mine Services dispatched Deborah Combs, Training Specialist, to the mine to review training records and the company's training plan.

On April 3, 2017, Dai S. Choi, Civil Engineer of the Pittsburgh Technical Support Center, Mine Waste & Geotechnical Engineering Division, arrived to assist with the investigation.

On April 4, 2017, formal interviews were conducted jointly by MSHA and the state at the Kentucky Division of Mine Reclamation & Enforcement's office in Middlesboro, Kentucky (see Appendix A).

DISCUSSION

The accident occurred while Partin was standing between the auger machine and highwall under the extended highwall guard. Kidwell was positioned on the auger machine to assist Partin and to observe the highwall. Partin had changed three worn cutter head bits when a triangular shaped rock measuring approximately 4 feet by 5 feet and 30 inches in thickness fell from the bottom section of the highwall, immediately above the coal seam and struck Partin from behind. The rock weighed about two tons.

Auger Machine

The auger machine was a Salem MUL-T (Triple Head) coal auger machine equipped with three 16-inch cutter heads that create an auger entry 18 inches in height and 56 inches in width. The machine also had 28 sets of 16 foot triple auger flights capable of mining an auger entry approximately 450 feet in depth and a front mounted heavy gauge screen highwall guard that could extend and retract with two 30 inch hydraulic cylinders (see Appendix B).

Highwall Conditions

At the time of the accident, the highwall measured 54 feet in height in front of the auger machine. The rock strata in the pit area consisted of sandstone, shale, and siltstone bands. Deteriorated sandstone ledges and new growth trees existed along the top section of the highwall. Two sets of strata joints intersected throughout the siltstone layer above the coal seam, creating a triangular-shaped rock that became separated at the top through a weak and weathered bedding plane.

Relationship between Alden Resources, LLC and Green Hill Mining, Inc.

The coal seam was originally auger mined in the late 1980's. At the time of the accident, the Green Hill Mining, Inc., GHM #51 was operating with the permission of the surface mine operator, Alden Resources, LLC. Green Hill Mining's intent was to auger mine through the existing auger entries of the coal seam. Partin was employed by Green Hill Mining at the time of the accident. Alden Resources conducted pit preparation and highwall scaling as mining advanced for areas to be auger mined.

Mining Sequence

The mining of the Jellico coal seam at this location in Pit #1 was conducted in a right to left mining sequence (looking toward the highwall). One pre-existing single 18-inch diameter auger entry and two spacing webs (approximately 9 inches in width) between each 18-inch auger entry, were skipped in order to support the highwall. The pre-existing single auger entries were estimated to be a maximum depth of 300 feet. The triple head auger machine penetrated three single entries, removing two webs and surpassing the depth of the single auger entries to an approximate depth of 450 feet (see Appendix C and Appendix D for the complete mining sequence).

Examinations and Hazard Removal

Alden Resources was required to perform on-shift examinations for hazardous conditions in areas of the mine where miners are working (30 CFR § 77.1713(a)) and to strip loose hazardous material for a safe distance from the top of all pits or highwalls to afford protections for miners (30 CFR § 77.1001). MSHA cited Alden Resources for violations of these mandatory standards,

Green Hill Mining was required to perform auger mining inspections for a distance of 25 feet on each side of the auger mining machine (30 CFR § 77.1501(a)). These inspections had to be performed before any mining began and once during each coal producing shift. The standard also mandates that all loose material be removed before miners enter the drilling area.

Information obtained through the interviews and the on-site investigation revealed the following highwall conditions:

- On Friday, March 24, 2017, after rock/debris fell from the highwall, the auger machine was moved to the left approximately 200 feet for the second shift to resume mining. Two auger entries were completed by the second shift at this new location.
- On Monday, March 27, 2017, the second shift ended early after rock/debris fell from the highwall.

- On Tuesday, March 28, 2017, normal mining shifts continued with no hazardous conditions identified.
- On Wednesday, March 29, 2017, the auger machine was moved away from the highwall during the first shift to remove fallen rock/debris and scale the lower section of the highwall. Also, a section of highwall approximately 97 feet to the left of the accident scene was identified by paint marks as bad and to be skipped.

No hazardous highwall conditions or corrective actions were recorded in the examination records on March 24, 27, and 29.

Ground Control Plan

Green Hill Mining, Inc. was required to follow a ground control plan (30 CFR § 77.1000). The ground control plan in effect at the time of the accident was acknowledged by MSHA on November 3, 2016. The Jellico coal seam was identified to be auger mined.

The auger safety precautions section of the ground control plan covered procedures to be followed for an unsafe highwall, barricading, and plan revisions. This section required mining to be immediately stopped, the affected area barricaded, and the ground control plan to be revised; "if stability failure or stress cracks occur in the highwall in active work areas where augering has occurred." MSHA's investigation determined that highwall stability failures and stress cracks existed in the area where the auger machine was used prior to the accident. Yet, the area was not barricaded and no ground control plan revisions were submitted by the mine operator and the auger continued to operate.

Illumination

Adequate illumination was provided in the auger pit area by a Coleman portable light plant and lights on the auger machine.

Weather Conditions

Weather data obtained for the mine location at the approximate time of the accident indicated the temperature to be 55 degrees, the dew point 46 degrees, relative humidity 72%, winds NE 3.5 mph, and visibility 10 miles. The weather did not contribute to this accident.

Training and Experience

Partin received experienced miner and task training as an auger operator at this mine location on November 4, 2016. Partin had a total of 8 years mining experience, including 12 weeks at this mining location as a foreman/auger operator. No training deficiencies were found during the investigation.

ROOT CAUSE ANALYSIS

MSHA conducted an analysis to identify the most basic causes of the accident that were correctable through reasonable management controls. Root causes were identified that, if eliminated, would have either prevented the accident or mitigated its consequences.

Listed below are root causes identified during the analysis and the corresponding corrective actions that were implemented to prevent recurrence.

1. Root Cause: Green Hill Mining, Inc. did not implement policies and procedures to prevent any person or persons from working between equipment and the highwall or spoil bank.

   Corrective Action: On April 4, 2017, Green Hill Mining, Inc. established and implemented a written policy of safety procedures to assure that no person or persons are allowed to work between equipment and the highwall or spoil bank. All miners were trained in the written policy.

2. Root Cause: Green Hill Mining, Inc. did not comply with the Auger Mining Safety Precautions identified in the acknowledged ground control plan.

   Corrective Action: On July 12, 2017, Green Hill Mining, Inc. revised the acknowledged ground control plan to include additional safety precautions for auger mining. The auger operator trained the miners concerning the additional precautions of the revised ground control plan on July 13, 2017. The operator provided a record of training received by miners to MSHA.

3. Root Cause: Green Hill Mining, Inc. and Alden Resources, LLC did not ensure mine examiners identified all hazardous highwall conditions, recorded all hazardous conditions daily, and took action to eliminate all hazardous highwall conditions.

   Corrective Action: On June 5, 2017, Green Hill Mining, Inc. implemented a written action plan to assure mine examiners identify and record all hazardous conditions and take appropriate corrective actions during mine examinations. The auger operator trained the miners regarding the provisions of the action plan. The operator provided a record of training received by miners to MSHA.

   On June 22, 2017, Alden Resources, LLC, ceased all mining activities at the Colonel Hollow Mine, highwall areas were barricaded, and the mine was placed in abandoned status.

CONCLUSION

The accident occurred because the mine operator did not implement policies and procedures to prevent miners from standing between the auger machine and highwall. Examinations conducted in the work area did not adequately identify all hazardous conditions. The mine operator did not comply with the auger mining safety precautions of the acknowledged ground control plan. A section of rock fell from the highwall, resulting in fatal injuries to the victim.

Jim W. Langley
District Manager

Date

ENFORCEMENT ACTIONS

1.103(k) Order No. 8373921 was issued to Green Hill Mining, Inc., on March 30, 2017.

An accident occurred at this operation on 03-30-2017, at approximately 02:15 a.m. As rescue and recovery work is necessary, this order is being issued, under Section 103(k) of the Federal Mine Safety and Health Act of 1977, to assure the safety of all persons at this operation. This order is also being issued to prevent the destruction of any evidence which would assist in investigating the cause or causes of the accident. It prohibits all activity at the entire mine site, until MSHA has determined that it is safe to resume normal mining operations in this area. This order applies to all persons engaged in the rescue and recovery operation and any other persons on-site. The order was initially issued orally to the mine operator at 04:25 a.m. and is now reduced to writing.

2. 104(d)(1) Citation No. 8373922 was issued to Green Hill Mining, Inc., for a violation of 30 CFR §77.1006(b).

As a result of a fatal accident investigation at the Green Hill Mining, Inc., GHM #51 mine, it is concluded that the following condition occurred prior to the accident on March 30, 2017: The second shift foreman/auger operator was positioned between the Salem MUL-T coal auger machine, serial number 51, and the base of the Jellico coal seam highwall changing worn cutter head bits. A rock from the highwall fell striking the victim. Men shall not work between equipment and the highwall where equipment may hinder escape from fall or slides. This violation is an unwarrantable failure to comply with a mandatory standard.

3. 104(d)(1) Order No. 8373923 was issued to Green Hill Mining, Inc., for violation of 30 CFR §77.1000.

As a result of a fatal accident investigation at the Green Hill Mining, Inc., GHM #51 mine, it is concluded that the operator failed to follow the procedures for an unsafe highwall and implement a plan revision as identified in the Safety Precautions for Auger Mining Operations of the acknowledged Ground Control Plan. Information obtained revealed that rocks/debris fell from the highwall on March 24, 2017, March 27, 2017, and March 29, 2017. The operator engaged in aggravated conduct constituting more than ordinary negligence by failing to immediately stop mining operations and revise the plan. This violation is an unwarrantable failure to comply with a mandatory standard.

4. 104(d)(1) Order No. 8373924 was issued to Green Hill Mining, Inc., for violation of 30 CFR §77.1501(a).

As a result of a fatal accident investigation at the Green Hill Mining, Inc., GHM #51 mine, it is concluded the first and second shift mine examiners failed to identify and record highwall hazards observed in the Jellico coal seam auger pit. As a result, corrective actions were not taken. On March 24, 2017, as a result of hazardous highwall conditions, the auger machine was moved the left approximately 200 feet to allow production work to continue on the second shift. On March 27, 2017, and March 29, 2017, rocks/debris fell from the highwall

with no hazardous conditions or corrective action recorded. Also on March 29, 2017, a section of highwall was identified by paint marks on the highwall as bad and to be skipped without a record of the hazardous condition. The operator engaged in aggravated conduct constituting more than ordinary negligence by failing to recognize and record the hazardous conditions and take corrective actions. This violation is an unwarrantable failure to comply with a mandatory standard.

5. 104(a) Citation No. 8373439 was issued to Alden Resources LLC, for violation of 30 CFR §77.1001.

Loose hazardous material shall be stripped for a safe distance from the top of pits or highwalls, or barriers, baffle boards, screens, or other devices shall be provided that afford equivalent protection. When examined the # 1 pit for a distance of approximately 450 feet, with highwall heights ranging from approximately 50 feet to 65 feet contained numerous hazardous conditions. Rock ledges are protruding out from the highwall above the # 1 pit in several locations, estimated from one to six feet in width and one to fifteen feet in length. Also loose unconsolidated rocks are observed in numerous locations along this highwall. There are several bushes and small trees growing on the face and ledges of the highwall. There are several visible cracks that allow dripping/running water to disappear and reappear in places below on the highwall. There are numerous bedding planes (both vertical and horizontal) and hill seams with noticeable separations. There are no barriers, baffle boards, screens, or other devices that afford miners protection installed. The operator has ceased production in the # 1 pit and is proceeding to cover the exposed auger holes and install earth barriers as required. This citation is being issued in conjunction with MSHA fatal accident investigation (E06) event number 4454202 and is a contributing violation to this fatal accident.

6. 104(d)(1) Citation No. 8373440 was issued to Alden Resources LLC, for violation of 30 CFR §77.1713(a).

Evidence has proven the on shift examinations conducted between 03/24/2017 and 03/29/2017 are not complete and are insufficient. When checked on these dates the examiner failed to identify and record the numerous hazards of unconsolidated, protruding rocks that is still present on the company # 1 pit highwall. The examiner made no mention of the small trees or bushes growing on the highwall on any of these dates. Also the examiner stated he had marked a section of highwall that was bad on 03/29/2017, but failed to barricade this area as prescribed by the current approved Ground Control Plan. Also on 03/24/2017 a portion of the highwall had a stability failure and the examiner made mention of the stability failure in the record book and barricaded the area off but failed to revise the ground control plan as stated on page 3 and item 1 in the approved ground control plan. The operator has engaged in aggravated conduct constituting more than ordinary negligence by failing to recognize and record these hazards. This violation is an unwarrantable failure to comply with a mandatory standard. This citation is being issued in conjunction with MSHA fatal accident investigation (E06) event number 4454202 and is a contributing violation to the fatal accident.

APPENDIX A
Persons Participating in the Investigation
(Persons interviewed are indicated by a * next to their name)

Green Hill Mining, Inc. Officials & Employees

Laird T. Orr, Jr. ..... President
Daniel T. Orr ..... Vice-President
*Paul A. Hulsey ..... Superintendent
*Daniel Hulsey ..... First Shift Foreman/Auger Operator
*Travis Kidwell ..... Second Shift Auger Helper
*Lester Erb, III ..... First Shift Auger Helper
*Johnathan W. Ohe ..... First Shift Auger Helper

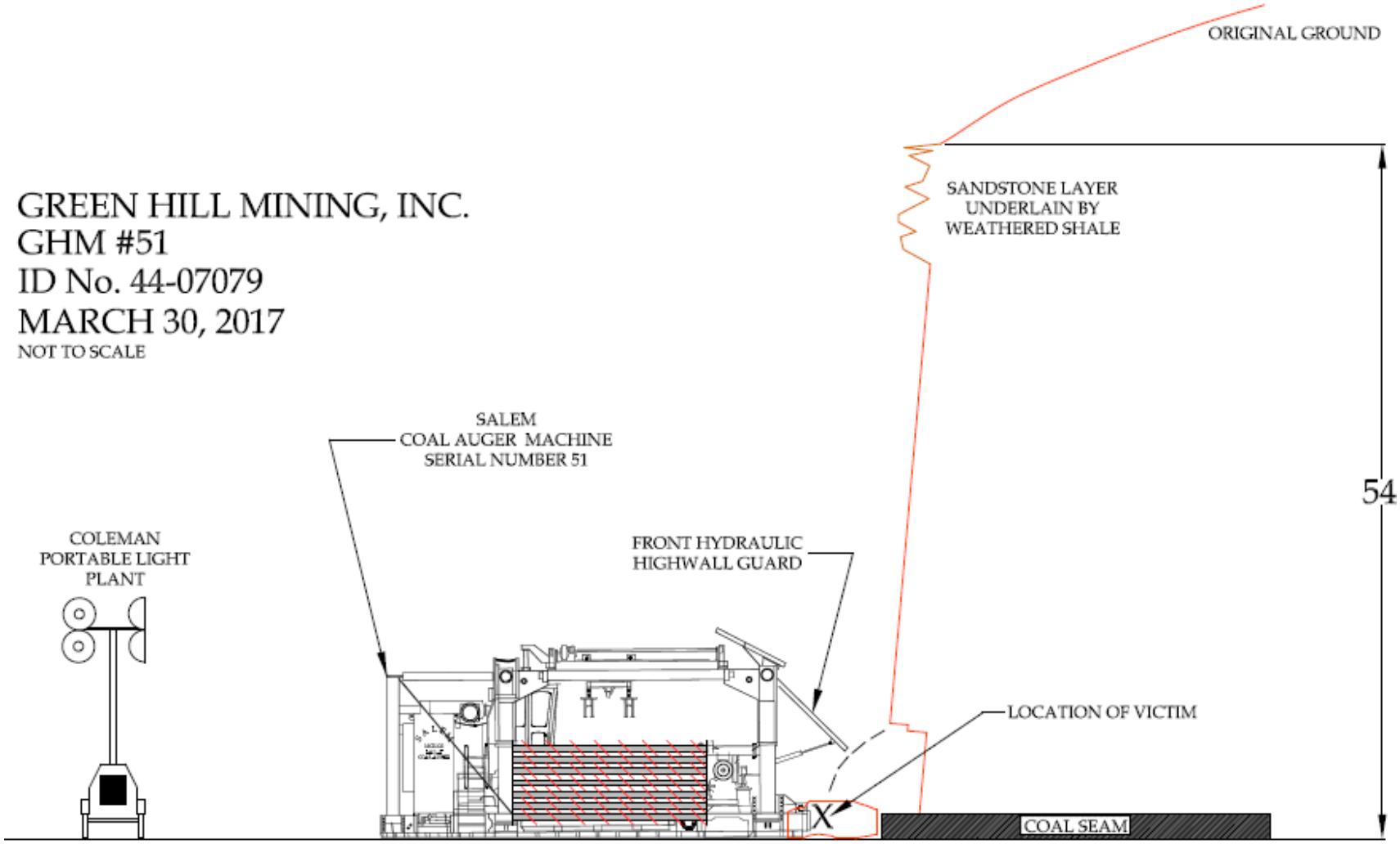
Kentucky Division of Mine Safety

Ricky Johnson ..... Acting Director
Timothy Fugate ..... Chief Accident Investigator
Jim Owens ..... Branch Manager
Ralph Crawford ..... Mine Safety Specialist II
Johnny Morgan ..... Mine Safety Specialist II
Dean Bush ..... Mine Safety Specialist I

Mine Safety and Health Administration

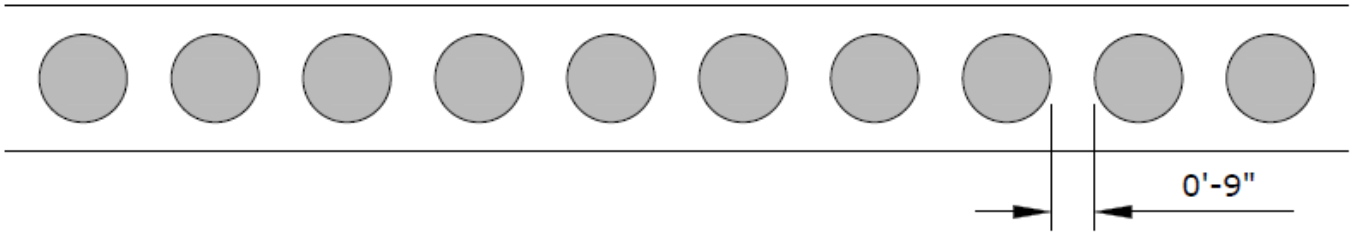
Steven L. Sorke ..... Accident Investigation Coordinator /Staff Assistant
David A. Faulkner ..... Mine Safety & Health Inspector/Accident Investigator
Dannie W. Lewis ..... Mine Safety & Health Inspector/Accident Investigator
Dai S. Choi ..... Civil Engineer
Argus Brock ..... Supervisory Mine Safety & Health Specialist/Roof Control
Deborah B. Combs ..... Training Specialist
Dennis J. Cotton ..... Assistant District Manager/Technical
Samuel R. Creasy ..... Assistant District Manager/Enforcement
Jim W. Langley ..... District Manager

APPENDIX B
Sketch of Accident Scene

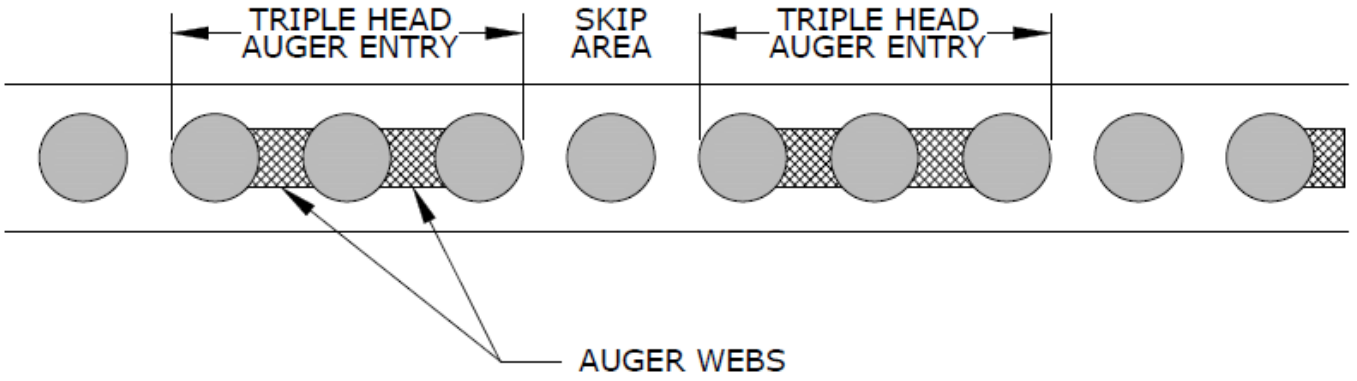


APPENDIX C
Sketch of Auger Mining History

Existing Single Auger Entries with average Web 9" and Diameter 18"



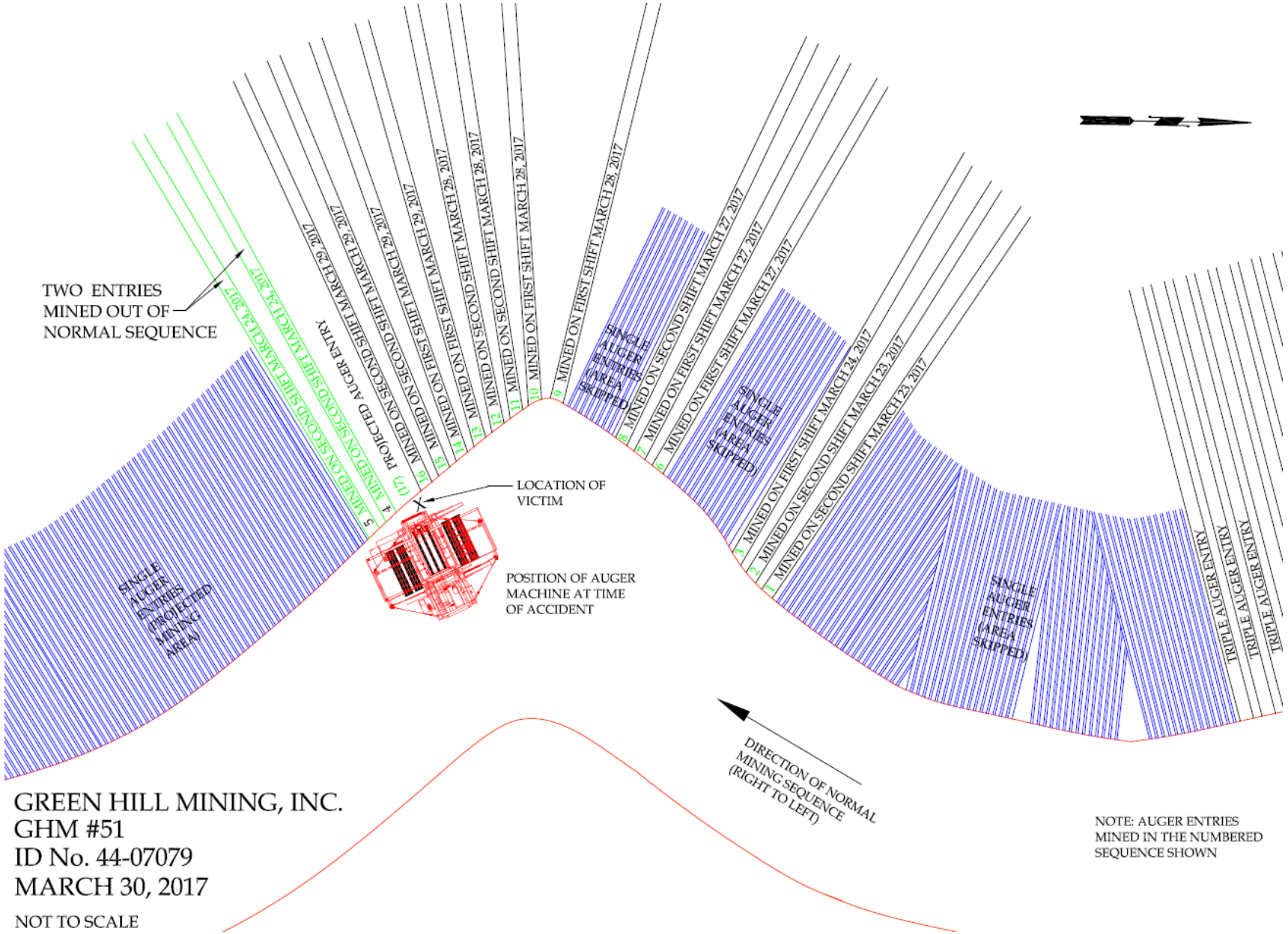
Triple Head Auger Entry 18" x 56" (Skip One Single Entry and Two Webs)



Elevation View - Auger Entries

(Not to scale)

APPENDIX D
Sketch of Mining Sequence



APPENDIX E
Victim Information

Accident Investigation Data - Victim Information
Event Number: 4 4 5 4 2 0 2

U.S. Department of Labor
Mine Safety and Health Administration

Victim Information: 1

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Degree of Injury:
Joseph W. Partin	*M*	*33*	*01 Fatal*

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:	6. Date and Time Started:
a. Date: 03/30/2017 b.Time: 2:09	*a. Date: 03/29/2017 b.Time: 17:00*

7. Regular Job Title:	8. Work Activity when Injured:	9. Was this work activity part of regular job?
170 Auger operator	*039 Machine maintenance/repair*	Yes X No

10. Experience	Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days
a. This Work Activity:	*1*	*0*	*0*	b. Regular Job Title:	*1*	*0*	*0*	c: This Mine:	*0*	*12*	*0*	d. Total Mining:	*8*	*0*	*0*