

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION

Coal Mine Safety and Health

REPORT OF INVESTIGATION

Surface Coal Mine

Fatal Powered Haulage Accident  
June 26, 2003

Guthrie Creek Mine  
Uptown Motors, Inc.  
Parrish, Walker County, Alabama  
ID No. 01-03162

Accident Investigators

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Coal Mine Safety and Health Inspector

Charles A. Scott  
Coal Mine Safety and Health Inspector

Ronny Jones  
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Originating Office  
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District 11  
135 Gemini Circle  
Birmingham, Alabama  
Richard A. Gates, District Manager

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**PHOTOGRAPH OF ACCIDENT SITE**



## OVERVIEW

On Thursday, June 26, 2003, at approximately 7:05 a.m., Bobby R. Rawls, age 59, a rock truck driver at the Guthrie Creek Mine, was fatally injured when the truck he was operating traveled past the edge of the 001 Pit dumping point location and traveled down the spoil embankment. The truck struck the highwall at the bottom of the pile and overturned. There were no eyewitnesses to the accident.

The accident occurred because berms, bumper blocks, safety hooks, or similar means to prevent overtravel and overturning were not provided at the 001 Pit dumping point location. Contributing to the accident was failure to identify and correct this condition during examinations of the work area. No defects that would affect the operation of the truck were found during the investigation.

Rawls had been employed at Guthrie Creek Mine since January 1, 2001. He had a total of 20 years surface mining experience. Rawls had received annual refresher training but had not received the required Part 48 experienced miner training before starting work duties at Guthrie Creek Mine.

## GENERAL INFORMATION

The Guthrie Creek Mine is a surface coal mine located approximately two miles from the intersection of Old Tuscaloosa Road and Browns Bridge Road. The mine is operated by Uptown Motors, Inc. and has a total employment of 35. The mine has two ten-hour production shifts per day and operates six days per week. The mine consists of one active strip pit, portable crushers, a coal load out yard and a truck scale. The coal is mined from the coal pit with equipment consisting of: one Hitachi EX1800 track hoe; two Caterpillar 992 end loaders; and one Caterpillar 998 end loader. The mine produces 800 - 1000 tons of bituminous coal per day from the Mary Lee Coal seam, which is approximately 50 inches thick. Independent contractors transport the coal from the coal load out yard to various customers off of the mine site.

The principal officers for the Guthrie Creek Mine are:

Joe Justice ..... Superintendent  
Roger Hill ..... Pit Foreman

The last regular safety and health inspection (AAA) conducted by MSHA was completed on March 31, 2003. The Non-Fatal Days Lost (NFDL) Incidence rate for the Guthrie Creek Mine is 0.00. The surface coal mine NFDL rate for the nation is 2.43.

## DESCRIPTION OF THE ACCIDENT

On Thursday, June 26, 2003, Bobby R. Rawls (victim) started his shift at approximately 6:00 a.m. at the Guthrie Creek Mine equipment parking lot. The weather was clear. Rawls started his 2002 Caterpillar model 777D rock truck and traveled to the 001 Pit area. Rawls got in line and waited to be loaded. The Caterpillar 992 front-end loader operator, Gary Courington, contacted Rawls on the radio. No further radio contact was made with Rawls prior to the accident. Following a brief conversation, Rawls' truck was loaded with spoil by the 992 front-end loader. Rawls proceeded out of the pit and traveled up the haulage road, which follows a gradual incline, crossed the East Haul Road, and turned north toward the 001 Pit dumping location. The round trip distance from the 001 Pit to the 001 Pit dumping location was approximately 3/8 of a mile. The road conditions were dry. The 001 Pit dumping location approach measured approximately 112 feet in width, 492 feet in length, and had an uphill grade of 2%. Rawls made an undetermined number of trips to the 001 Pit dumping point location. While in the process of backing the loaded rock truck towards the edge of the dumping point, the truck overtraveled, went down the spoil embankment, struck the highwall at the bottom of the spoil, and overturned.

Between 7:05 a.m. and 7:10 a.m. a second truck driver, Tommy Kilgore, saw Rawls' truck wrecked at the bottom of the spoil pile. Kilgore called for help on his CB radio and informed the rest of the crew of the accident. Frank Conner, truck driver, climbed down the spoil pile to the truck. He stated he called to Rawls and got no response. The crew began to build an access road to the truck. When the road reached the truck, paramedics were on the scene. A paramedic, Roger Hill, and drill operator, Taylor O'Rear, found Rawls inside the cab of the truck. The paramedic checked Rawls' pulse and found none. The paramedic had to cut the seat belt that Rawls was wearing to facilitate the removal of Rawls from the truck. Walker County Coroner, Joey Vick, arrived on the scene and pronounced Rawls dead at 8:15 a.m. An autopsy was not performed.

## INVESTIGATION OF ACCIDENT

At approximately 8:30 a.m. on Thursday, June 26, 2003, Charles A. Scott, Surface Coal Mine Safety and Health (CMS&H) Inspector of the Hueytown, Alabama field office was notified by Joe S. Justice, Superintendent of Guthrie Creek Mine of a fatal haulage accident that had occurred at the mine site. Scott notified Ken Ely, Supervisory Coal Mine Safety and Health Inspector, Hueytown field office, of the accident. Ely notified Gary Wirth, the District 11 Assistant District Manager. Wirth formed an Accident Investigation Team. CMS&H accident investigators Mary Jo Bishop and Charles A.

Scott along with Acting Accident Investigation Coordinator Terry Langley were dispatched to the scene.

An order was issued pursuant to section 103(k) of the Mine Act to ensure the safety of the miners. Preliminary information was gathered and the accident scene was examined. Ronny Jones, CMS&H Training Specialist, conducted a Part 48 audit at the mine on June 26, 2003. Jim Angel, Mechanical Engineer with MSHA's Approval and Certification Center was contacted and dispatched to the accident site to assist with the investigation.

On June 27, 2003, Bishop, Scott, and Angel returned to the accident scene. An on-site investigation and subsequent testing and evaluation of the Caterpillar 777D rock truck and the 001 Pit dumping point location was conducted. The Accident Investigation Team returned to the site on June 28, 30, and July 1 to continue the investigation.

On June 30, 2003, the rock truck was removed from the base of the spoil pile and towed to the equipment parking area.

On July 1, 2003, the Accident Investigation Team began the investigation of the rock truck. Damage to the truck's engine did not allow it to be operated. Thompson Caterpillar of Birmingham, Alabama assisted in testing the truck's components. The on-site investigation revealed no defects on the truck that would have affected its operation at the time of the accident.

MSHA and the State of Alabama jointly conducted the investigation with the assistance of mine management, and other mine personnel. Interviews with persons who had knowledge of the accident were conducted by MSHA. The interviews were conducted at the Guthrie Creek Mine office on June 27, 2003. Nine interviews were conducted. None of those interviewed requested that their statements be kept confidential. A list of those who were present and/or participated in the investigation is included in Appendix B.

## DISCUSSION

### **Accident Scene Information:**

The accident occurred at the 001 Pit dumping point location. This section of the 001 Pit was being filled in by spoil material that was being dumped at the time of the accident. A total of five rock trucks were dumping at this location on the morning of the accident.

The victim had hauled an unknown number of loads of spoil on the morning of the accident. The load trip counter on Rawl's truck had not been reset prior to the start of his shift. The other trucks that were dumping at the 001 Pit Dumping location that morning had trip load counts that indicated 5 to 7 loads had been dumped up to the time when Rawl's truck was observed at the bottom of the spoil.

Investigation of the wrecked truck and the scene revealed that the truck traveled backwards down a 71 percent grade for approximately 119 feet. The truck's parking brake system was not applied and the transmission was in the reverse gear position.

There was no berm provided at the edge of the 001 Pit Dumping point for 82 feet. The daily on-shift examination record showed no hazardous conditions recorded for the 001 Pit Dumping location. Safety Standard 30 CFR 77.1713(a) requires the operator to correct hazardous conditions, such as the lack of berms at active dumping locations, identified during such examinations. There was no indication of ground failure at the edge of the dumping point that would have destroyed evidence of any berm that may have existed prior to the accident.

### **Part 48 Training:**

The victim had 20 years of experience as a truck driver, with 2 ½ years of experience driving for the Guthrie Creek Mine. A review of the records and information provided by the mine operator indicated that the victim had not received the required Part 48 experienced miner training when he was first employed at the mine. However, he had received annual refresher training since that time, which included instruction on recognition of hazards. Therefore, the lack of experienced miner training was not a contributing factor to the accident.

## **Mining Equipment:**

**MACHINE INFORMATION:** The machine was a 2002 Caterpillar (CAT) Model 777D, Serial Number AGC1010, rigid body, rear dump haul truck. The gross vehicle weight (GVW) was 355,000 pounds. The maximum payload capacity was 200,000 pounds. The truck was about 32 feet long, 20 feet wide and 15 feet high. The machine's odometer read 20,672 miles and the dashboard hour meter read 5886.3.

**ENGINE:** The truck was powered by a CAT Model 3508B, 8 cylinder, 2105 cubic inch, twin turbocharged, aftercooled, 938 horsepower diesel engine. Due to the damage sustained during the accident, the engine could not be started.

**TRANSMISSION:** The truck had an electronically controlled, automatic transmission with seven forward speeds, neutral, and one reverse. A single-lever shift control provided automatic shifting. The shift lever was manually operated, and no defects were found. The shift lever was not damaged during the accident. The CAT Electronic Technician (computer diagnostic interface) was used to confirm the shift lever was sending correct gear selection signals to the transmission. The transmission was equipped with a reverse transmission neutralizer. The reverse neutralizer shifted the transmission into neutral from reverse if the body dump control lever was moved to the raise position. The neutralizer switch was tested by checking its function using the Electronic Technician to monitor the electric signal sent to the transmission. With the transmission lever in reverse, the reverse neutralizer signaled the transmission's downshift solenoid to activate and shift the transmission into neutral when the bed dump lever was moved to the bed raise position. The operation of the Reverse Neutralizer may be performance tested per the instructions in the CAT Service Manual at Thompson Tractor after the truck is repaired.

The truck's transmission lever was found in the neutral position when inspected. However, it was reported that the backup alarm and backup lights were operating when the wrecked truck was first discovered. This indicates the transmission was in reverse at the time of the accident. This was confirmed by the Electronic Technician and through a check of the transmission's actual gear position. The transmission's internal rotary selector spool was inspected and found to be in the reverse position.

**SERVICE BRAKE SYSTEM:** The service brakes consisted of oil cooled, air over oil actuated, wet disc type brakes in the front and oil cooled, air over oil actuated, wet disc brakes in the rear. The dual circuit, front and rear, service brakes were controlled by a foot operated pedal.

The service brake pedal appeared to be undamaged. It moved freely throughout its range and returned to its normal position when foot pressure was released. In order to

conduct some brake system tests, the truck was supplied with air pressure from a service truck. No air or hydraulic leaks were found in any of the brake systems.

Air pressure of 116 psi (120 psi is the normal maximum operating air pressure) was provided to the truck's brake system air tanks. Pressure gages were installed at the front and rear slack adjusters to measure the oil pressure to the wet disc service brake pistons. With the service brake foot pedal applied the oil pressure to the front brakes was measured as 1200 psi and the pressure to the rear service brakes was measured as 700 psi, both within the normal operating range.

The Electronic Technician provides indications of machine problems. There were no active brake system fault codes. None of the logged brake system fault codes indicated a malfunction of the brake system that would have caused decreased braking capability.

The "Check Rear Brake Disc Pack for Wear" procedure in the CAT manual was performed at Thompson Caterpillar on January 28, 2004. Since the truck could not be operated to retract the parking brake piston a portable hydraulic unit was used to supply approximately 700 psi hydraulic pressure to retract the parking brake piston. Also since the truck could not be run, there was no cooling oil present as required in CAT procedure. This may have prevented the service brake piston from fully retracting. With the service brake piston not fully retracted there may be more disk wear than indicated by the measurements taken:

Right Side

Parking Brake Off- 1.118"

Parking brake On- 0.653"

0.465" corresponds to 60% disk wear

Left Side

Parking Brake Off- 1.129"

Parking brake On- 0.753"

0.376" corresponds to 30% disk wear

There is no indication that the above disc pack wear contributed to the accident.

The "Check For Leakage in Brake Piston Seals" in the CAT Manual was performed at Thompson Tractor on January 28, 2004. This test included a check of the front and both right and left rear brakes together and a test of the right and left rear brakes individually per the CAT Manual.

Front master cylinder with 80 psi air pressure supplied to simulate fully applied retarder:

Time 0 min., rod measurement-  $7\text{-}5/8''$

Time 10 min., rod measurement-  $7\text{-}1/4''$

Movement-  $3/8''$  exceeded the  $1/8''$  limit in the CAT manual.

Note that the excessive stroke of the front brakes is not considered significant as it relates to the accident since Caterpillar has confirmed that this truck can meet SAE J1473 braking performance criteria without the front brakes.

Rear master cylinder with 80 psi applied to simulate fully applied retarder:

Time 0 min., rod measurement-  $7\text{-}15/32$

Time 10 min., rod measurement-  $7\text{-}15/32$

Movement-  $0''$  within the  $1/8''$  limit in the CAT manual.

Rear master cylinder with 80 psi unit applied to simulate fully applied retarder, test of right rear brake unit only:

Time 0 min., rod measurement-  $9\text{-}1/4$

Time 10 min., rod measurement-  $9\text{-}7/32$

Movement-  $1/32''$  within the  $1/8''$  limit in the CAT manual.

Rear master cylinder with 80 psi applied to simulate fully applied retarder, test of left rear brake unit only:

Time 0 min., rod measurement-  $9\text{-}7/32$

Time 10 min., rod measurement-  $9\text{-}7/32$

Movement-  $0''$  within the  $1/8''$  limit in the CAT manual.

The "Service Brake Check" in the CAT service manual is being delayed until the truck can be started. It may be performed at Thompson Tractor after the truck is repaired.

**PARKING BRAKE:** The truck was equipped with an ON-OFF hand control on the transmission control console to either apply or release (unmodulated) the parking brakes. The parking brake system used the same rear wet disc brakes as used for the service brakes. However, these disc brakes are spring applied and hydraulically released when they function as the parking brakes. The parking brake switch was found in the OFF position and with no visible damage. The operation of the parking brake was checked with the Electronic Technician, and no fault codes were found. The parking brake control lever was manually operated and no defects were found. The tires did not rotate when the machine was dragged during its recovery indicating that the parking brakes were applied. The parking brake system also included a park brake release button. This control prevents the parking brake from releasing automatically as air pressure builds up during start up if the parking brake lever is in the release

position. The parking brake reset button was manually operated, and no defects were found.

RETARDER: The truck was equipped with a hand control on the right side of the steering column to provide vehicle retarding. The retarder control gradually provides air pressure to proportionally apply (modulate) the front and rear service brakes.

The previous shift operator stated that the retarder lever appeared to be rotated too far in one direction but that the retarder worked properly. Information from Caterpillar stated that the retarder would achieve maximum braking force at its designed maximum rotation of 85°. If it rotated past this internal stop point the braking force would deteriorate.

Visual examination showed the retarder lever was broken from the steering column. The following damage was noted: The handle and head were missing from the valve. Most of the top of the cam follower, where it extends inside the adjusting ring, appeared to be missing. A portion of the valve body was also broken. The retarder valve functioned when manually activated at the accident site.

The truck was taken to Thompson Tractor. The retarder was further tested at Thompson Tractor and removed from the truck on 1/28/04. Prior to removal of the retarder from the truck, compressed air was supplied to the retarder valve from a service truck. The supply air line was connected to the outlet hose from the haul truck's compressor and the pressure was regulated to the same supply air pressure it would see during normal operation of the truck, 120 psi. Approximately 14 psi was measured at both the front and rear brake master cylinders. This indicated that the retarder was either in the slightly applied position or there was leakage through the retarder.

Since the handle was missing from the valve, attempts were made to move the valve to the full applied position using tools to manually move the cam to the applied position. These attempts were unsuccessful. The valve was then checked for air leaks. A slight air leak was heard in the valve. An air leak was found on the compression fitting to the nipple connection at the supply port of the valve using a soap solution but this was not the source of the leak heard. It is suspected that the air leak may have been coming out of the top of the valve past the cam but this area was not checked using a soap solution in order to prevent contamination from entering the valve. The top of the valve was capped with a plastic cap and electrical tape and the valve body cleaned with degreaser prior to removing the air line connections. The three air line ports were then also capped with plastic caps. The valve was placed in a plastic evidence bag and then placed in a cardboard box sealed with evidence tape for transfer of custody to Thompson Tractor.

Because of requests to modify the test of the retarder by several of the interested parties and specifically Thompson Tractor, the disassembly of the retarder was delayed pending a proposal to have the disassembly of the retarder performed at its manufacturer, Bendix, Inc. Thompson Tractor stated they would coordinate arrangements to have the retarder disassembled and evaluated by Bendix, Inc. Thompson Tractor agreed to notify MSHA and the other interested parties of the arrangements.

Note that Caterpillar specifies that the retarder is not to be used for parking or stopping the machine.

**SECONDARY BRAKE:** The truck was equipped with a foot pedal to provide modulated secondary braking. The secondary brake modulates air pressure to apply the front service brakes and it modulates hydraulic pressure within the parking brake system to allow the spring applied parking brakes on the rear axle to apply.

The “Secondary Brake Check” in the CAT service manual is being delayed until the truck can be started. It may be performed at Thompson Tractor after the truck is repaired.

**STEERING:** Steering was provided by a hydraulic steering system with a separate reservoir. Supplemental steering was provided by an automatic, electric driven pump circuit. The pump activated when it was manually switched on.

**SEAT BELT:** A seat belt was present. The buckle was still latched during the investigation but the belt was reportedly cut during the recovery of the victim.

**PRE-OPERATION CHECK:** Pre-operational checklists were not completed at this mine. The truck operator on the work shift prior to the accident stated that the retarder lever appeared to be rotated too far in one direction but that the retarder worked properly.

**MIRRORS:** The truck was equipped with two rear view mirrors. The mirrors were broken from their frames and the frames and support arms severely damaged apparently during the accident. There was no information obtained during the investigation that the mirrors contributed to the accident.

**TRUCK CONDITION:** The truck sustained structural damage to its front end, its bed cab protector, ROPS, frame, and right rear strut. The truck was found laying on its right.

The key operated engine start switch was found in the ON position. The fuel tank was full. The engine was off when the truck was observed at the bottom of the hill

immediately after the accident. The headlight switch was found in the ON position, however, the front end of the machine sustained damage in the headlight areas during the accident. The left front headlight lens was cracked and its electrical wire broken and the right front headlight was missing. It was reported that the headlights functioned during the shift prior to the accident.

The truck was reportedly fully loaded immediately before the accident. No material remained in the truck's bed after the accident.

The accelerator pedal moved freely throughout its range, visibly appeared to be undamaged, and returned to its normal position when foot pressure was released.

The operator's compartment contained some rocks that apparently entered the compartment during the accident. The left side operator's door had been compressed by the Rollover Protective Structure/Falling Object Protective Structure. The steering wheel and part of the steering column had broken but remained attached to the lower part of the steering column.

No defects were found with the machine that would have affected the operator's ability to control the machine. As noted previously, some additional functional tests of the service brakes, secondary brakes, park brake, and reverse neutralizer have been requested from Thompson Tractor. Disassembly of the retarder at its manufacturer, Bendix, is also being planned. However, the results of these future tests do not affect the findings summarized in this Discussion. Should additional pertinent information become available as a result of the requested future testing, an amended report may be issued.

## ROOT CAUSE ANALYSIS

A root cause analysis was conducted. The following causal factors were identified.

Causal Factor: A berm was not provided at the edge of the 001 Pit dumping point to prevent overtravel or overturning.

Corrective Action: Dumping location practices and procedures should be reviewed to ensure that the dumping process does not create hazards to persons that are required to work in those areas.

Causal Factor: The failure to identify and correct conditions that posed a hazard to personnel in the active work area.

Corrective Action: Dumping location practices and procedures should be reviewed to ensure that the dumping process does not create hazards to persons that are required to work in those areas. Workplace examinations should be conducted frequently for changes affecting safe operation and prompt correction of hazards when observed. Examiners should be adequately trained to detect hazards.

## CONCLUSION

On June 26, 2003, Bobby R. Rawls received fatal injuries as a result of a surface haulage accident at the Guthrie Creek Mine. The accident occurred because berms, bumper blocks, safety hooks, or similar means to prevent overtravel and overturning were not provided at the 001 Pit dumping point location. Contributing to the accident was failure to identify and correct this condition during examinations of the work area. No defects that would affect the operation of the truck were found during the investigation.

Approved:

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Richard A. Gates  
District Manager

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Date

## ENFORCEMENT ACTIONS

Order No. 7671220 was issued on June 26, 2003, under the provisions of Section 103(k) of the Mine Act: This mine has experienced a fatal surface haulage accident. This order is issued to ensure the safety of all persons at this operation. It prohibits all activity at this mine until MSHA has determined that it is safe to resume normal operations. The mine shall obtain prior approval from an authorized representative for all actions to recover and/or restore operations to the affected area.

104(d)(1) Citation No. 7671231 was issued for a violation of 30 CFR 77.1605(l): Berms, bumper blocks, safety hooks, or similar means were not provided to prevent overtravel and overturning at the 001 Pit dumping location of the Guthrie Creek Mine. A fatal surface haulage accident occurred on June 26, 2003 when a Caterpillar Model 777D rock truck driven by Bobby Rawls backed towards the edge of the dump and overtraveled. The truck traveled down the spoil embankment, struck the highwall at the base of the spoil, and overturned. The area where the victim, along with 4 other trucks, was dumping had no berm provided for a distance of 82 feet. The spoil embankment had a slope of approximately 71 degrees. This mine was cited for non-compliance of 30 CFR 77.1605(l) during the current AAA inspection. Citation No. 7671227 was issued citing 4 dumping locations other than the 001 Pit dumping location (accident scene) where berms, bumper blocks, safety hooks, or similar means were not provided to prevent overtravel and overturning. The condition at the cited locations was extensive and obvious to the most common observer.

104(d)(1) Order No. 7671230 was issued for a violation of 30 CFR 77.1713(a): The operator failed to conduct an adequate on-shift daily examination to detect hazardous conditions at the active 001 Pit dumping location work area on June 26, 2003. A hazardous condition existed in that the edge of this dump was not provided with berms, bumper blocks, safety hooks, or similar means to prevent overtravel and overturning at the dumping location. A fatal surface haulage accident occurred on June 26, 2003, when a Caterpillar Model 777D rock truck driven by Bobby Rawls backed towards the edge of the 001 Pit dumping location and overtraveled. The truck traveled down the spoil embankment, struck the highwall at the base of the spoil, and overturned. The area where the victim, along with 4 other trucks, was dumping had no berm provided for a distance of 82 feet.

This mine was cited for non-compliance of 30 CFR 77.1605(l) and 77.1605(k) during the current AAA inspection. The person responsible for making the daily on-shift examination of the active work areas is a certified mine foreman.

## APPENDIX A

Persons participating in the investigation:

Uptown Motors Inc.:

Charles Justice, President  
Joe Justice, Superintendent  
Roger Hill, Pit Foreman

Alabama Department of Natural Resources:

Don Keith, Mine Inspector

Mine Safety and Health Administration:

Mary Jo Bishop, Coal Mine Safety and Health Inspector, District 11  
Charles A. Scott, Coal Mine Safety and Health Inspector, District 11  
Ronny Jones, Coal Mine Safety and Health Training Specialist, Educational Field Services  
Terry Langley, Acting Accident Investigation Coordinator, District 11  
Jim Angel, Mechanical Engineer, Technical Support, Mechanical and Engineering Safety Division

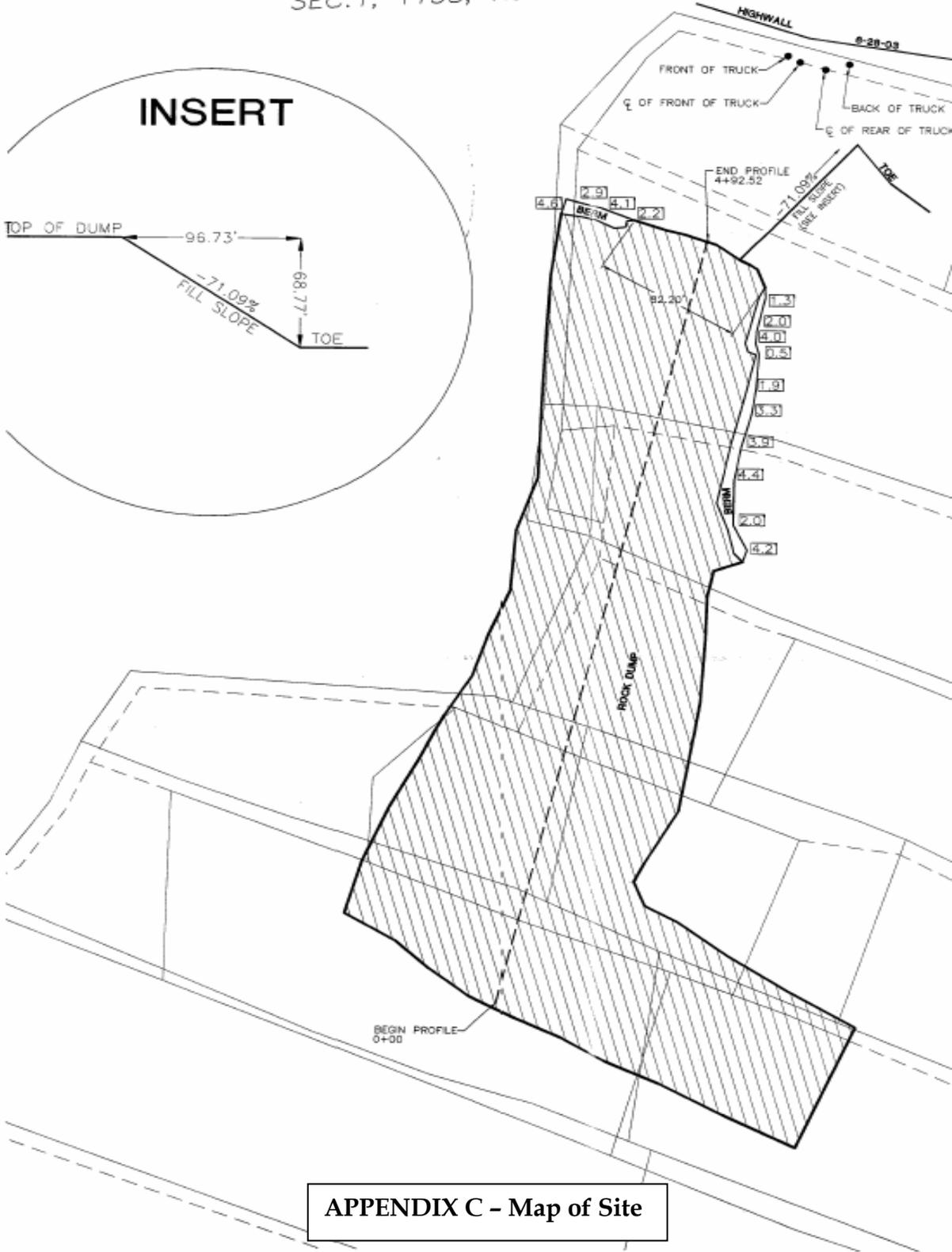
## APPENDIX B

Persons interviewed:

Uptown Motors Inc.:

Roger Hill, Pit Foreman  
Mark Bruner, Rock Truck Driver  
Jerry Don McCollough, Loader Operator  
Tommy Kilgore, Rock Truck Driver  
Frank Conner, Rock Truck Driver  
Donald Wayne Stone, Dozer Operator  
Joe R. Fuller, Rock Truck Driver  
Taylor O'Rear, Drill Operator  
Gary Courington, Loader Operator

SE 1/4 of NE 1/4  
SEC. 1, T15S, R8W



APPENDIX C - Map of Site



**APPENDIX D- Photograph of Accident Scene**