

**UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION**

**REPORT OF INVESTIGATION**

Surface Nonmetal Mine  
(Phosphate)

Fatal Machinery Accident  
May 26, 2006

McDonald Construction Co.  
Contractor I.D. No. BA3  
at  
Mosaic Fertilizer, LLC  
Hookers Prairie Mine  
Polk, Bradley County, Florida  
Mine I.D. No. 08-00835

**Investigators**

Donald B. Craig  
Supervisory Mine Safety and Health Inspector

Donald R. Baker  
Mine Safety and Health Inspector

Jose J. Figueroa  
Mine Safety and Health Inspector

Michael Superfesky  
Civil Engineer, P.E.

Alan Coburn  
Mine Safety and Health Specialist

Originating Office  
Mine Safety and Health Administration  
Southeastern District  
135 Gemini Circle, Suite 212, Birmingham, AL 35209  
Michael A. Davis, District Manager



## **OVERVIEW**

John W. Frymire, dozer operator, age 58, was fatally injured on May 26, 2006, when the dozer he was operating fell into a water filled pit. The victim had been pushing the top layer of dirt and vegetation from reclaim piles into adjacent water filled ponds.

The accident occurred because safe operating procedures were not established to ensure the dozer could safely push material into the pond. An examination of the ground conditions at the edge of the bank was not completed prior to work commencing. Management did not conduct a risk assessment to identify all possible hazards and establish safe work procedures for the assigned task.

## **GENERAL INFORMATION**

Hookers Prairie Mine, a phosphate operation, owned by Mosaic Fertilizer, LLC (Mosaic) was located at Polk, Bradley County, Florida. The principal operating official was Dave Spedden, mine manager. The mine normally operated three eight-hour shifts per day, seven days a week. Total employment was 144 persons.

McDonald Construction Corporation (McDonald), an earthmoving contractor, was located in Lakeland Florida. The principal operating official was Keith Hancock, supervisor land reclamation. McDonald was contracted by Mosaic to reclaim land at their mine sites. The victim was presently assigned to the mined out area being reclaimed by McDonald for Mosaic. McDonald employed 10 employees at this mine. They worked one, 10-hour shift, 7 days a week.

Draglines were used to strip 20 to 60 feet of overburden and pile the material into the adjacent open mining cut. The ore, called matrix, was then mined into a slurry pit and pumped through a 20-inch pipeline to the wash plant that would break up the clay in the ore and separate the ore into three components. The sand was pumped back to the mining cuts to be used as part of the material for land reclamation. Phosphate rock from the washer and flotation plant was loaded into rail cars and shipped to Mosaic chemical plants for further processing into fertilizer. The reclaimed areas included flat land, lakes, wetlands, and low sand hills.

The last regular inspection at this operation was conducted June 29, 2005.

## **DESCRIPTION OF ACCIDENT**

On the day of the accident, John Frymire (victim) reported to work at 7:00 a.m., his normal starting time. Herman Acorn, supervisor, drove Frymire to a dozer and directed him to push the top layer of soil and vegetation off the earthen sand piles into the water filled ponds in preparation for the surveying crew. Acorn left Frymire and went to direct other employees work assignments.

About 11:50 a.m., Acorn drove through the reclaim area and saw Frymire pushing topsoil and grass into the pond. Aubrey Pellom, service truck operator, arrived at the reclaim area around 12:30 p.m., to service the dozer. Pellom contacted his supervisor by radio and reported that he couldn't find the dozer or the dozer operator.

When Acorn arrived, he saw the top of the bulldozer partially visible above the surface of the pond but he could not see the victim. Acorn called Paul E. Abbey, McDonald's maintenance supervisor, for help.

When Abbey arrived, he donned a life preserver and waded out to the dozer. Dirt and mud had fallen in around the dozer's right side cab door making it difficult to open. Abbey opened the

door, reached inside, and felt the victim still in the operator's seat. He pulled the victim out of the seat, took the life preserver he was wearing, and placed it on Frymire. Abbey then found the victim's life preserver inside the cab, placed it on himself and returned to the shore.

The Polk County Sheriff's Department arrived along with local paramedics who pronounced the victim dead. The cause of death was attributed to drowning.

## **INVESTIGATION OF THE ACCIDENT**

MSHA was notified of the accident at approximately 1:50 p.m. by telephone from Dellwood McDonald, safety director for McDonald Construction, to Curtis Roth, supervisory mine safety and health inspector. An investigation was started the same day. An order was issued under the provisions of Section 103(k) of the Mine Act to ensure the safety of the miners.

MSHA's accident investigation team traveled to the mine, conducted a physical inspection of the accident scene, interviewed employees and contractors, and reviewed documents and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management, employees, and the contractors. The Sheriff's Department, emergency medical services, and the medical examiner of Polk County also assisted.

## **DISCUSSION**

### **Location of the Accident**

The accident occurred in a reclamation area at a location identified as South CR630 Reclamation Project, consisting of approximately 141 acres. On the day of the accident, McDonald had three bulldozers working on this project, stripping vegetation from piles of waste material (spoil piles). The site included ponds and dragline spoil piles.

### **Equipment**

The Caterpillar D8R track dozer involved in the accident was owned by McDonald. The dozer weighed 82,850 pounds and had a blade capacity of 13 cubic yards. This capacity of overburden material could potentially place a maximum of 45,630 lbs of additional weight on the edge of the bank. The dozer was equipped with a roll-over-protection enclosed cab and had a manually operated blade and tramming controls. The dozer seat was equipped with a seatbelt. After the pond was de-watered, the dozer was found in reverse gear with the blade up and the blade end facing the pond.

## **Overburden Material**

The overburden material that formed the bank/pile consisted of sand with some silts. The sand was not dense, but was in a very loose state, which was consistent of sand placed by casting. The loose condition of the sand was verified by standard penetration testing performed by the operator during exploratory drilling of the accident area. The very loose condition of the sand made it very susceptible to sliding or sloughing from vibrations and the weight of the dozer. During recovery operations of the dozer, vibrations, generated from equipment working adjacent to, but not on the bank, appeared to have caused an additional 15-foot-wide portion of the crest of the failure face to slide or slough off of the eastern end of the bank.

The angle of repose for cast overburden at the mine was 34 degrees (1-foot of horizontal run to 1.5 feet of vertical rise).

Approximately 130 feet (arc length or perimeter) of material along the west side of the bank slid/moved when the failure occurred. The scarp that remained following the failure varied in height between approximately three feet to six feet.

Mining in the accident area was conducted by a previous mine owner over 8 years ago. Twenty to 30 feet of overburden was removed to uncover the phosphate ore. The overburden piles consisted of silty-sand. The phosphate ore (matrix) was located 15 to 50 feet below the surface and the thickness of the matrix varied between 15 and 20 feet.

Based upon the height of water pumped out of the pond and measurements taken after the accident, the water surface was between five and eight feet below the crest of the bank. The sloughed overburden and sediments had filled the pit to 10 feet below the crest of the bank. Water had collected on the east and west side of the bank to form ponds.

On the day of the accident, the water level on the east side of the bank was one foot higher than the pond on the west side. This head differential was not significant enough to cause large seepage forces within the bank which could lead to slope failure. However, having water against both sides of the bank contributed to a larger area of the soil in the bank being saturated. The areas where the soil was saturated were more prone to sloughing.

## **Weather**

The weather on the day of the accident was partly cloudy and warm, with temperatures ranging from 85 to 95 degrees Fahrenheit.

### **Medical Analysis**

Toxicology Laboratory results found the victim's blood alcohol was 0.10 percent and established that he would have been impaired. Positive cocaine results were also established, however it could not be determined if these levels would have impaired the victim.

### **Training and Experience**

John W. Frymire had 12 years and 4 weeks total mining experience. He was a contract dozer operator for McDonald Construction, LLC and had received training in accordance with 30 CFR, Part 48.

## **ROOT CAUSE ANALYSIS**

A root cause analysis was conducted and the following causes were identified.

Root Causes: Management's policies and controls were inadequate and failed to require a person experienced in examining ground conditions to examine the edge of the ponds. Procedures were not developed to safely complete the task. The mine operator did not ensure that the contractor had established safe procedures for pushing top soil into the ponds. Management failed to complete a risk assessment to identify possible hazards and they failed to communicate to the miners the safety aspects and safe working procedures relating to the task they were assigned. Procedures were not in place to identify possible alcohol use during the work shift.

Corrective Action: Procedures should be established to identify significant tasks and jointly conduct a risk assessment with miners to identify and correct all possible hazards and establish safe work procedures. Management should develop and implement policies addressing substance abuse.

## **CONCLUSION**

The accident occurred because safe operating procedures were not established to ensure the dozer could safely push material into the pond. An examination of the ground conditions at the edge of the bank was not completed prior to work commencing. Management did not conduct a risk assessment to identify all possible hazards and establish safe work procedures for the assigned task.

## ENFORCEMENT ACTIONS

### **Mosaic Fertilizer, LLC**

Order No. 6098414 was issued on May 27, 2006, under the provisions of Section 103(k) of the Mine Act:

A fatal accident occurred at this operation on May 26, 2006, when a dozer fell into a pond as waste material was being pushed into the pond. This order is issued to assure the safety of all persons at this operation. It prohibits all activity at this mined out area, being reclaimed and identified as being on the South side of County road #630, until MSHA has determined that it is safe to resume mining operations in the area. The mine operator shall obtain prior approval from an authorized representative for all actions to recover and/or restore operations to the affected area.

The order was terminated on May 27, 2006. Conditions that contributed to the accident no longer exist and normal mining operations can resume.

### **McDonald Construction Company**

**Citation No. 6098415** was issued on July 10, 2006, under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR 56.3401.

A fatal accident occurred at this mine on May 26, 2006, when a dozer that was pushing material into a water filled pit fell into the water. A supervisor or other designated person had not examined ground conditions in this area prior to the work commencing.

The citation was terminated on August 2, 2006. All employees working in the reclamation area were instructed how to examine ground conditions to identify conditions that may pose a hazard.

**Citation No. 3876726** was issued on September 12, 2006, under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR 56.20001.

A fatal accident occurred at this mine on May 26, 2006, when a dozer that was pushing material into a water filled pit fell into the water. Toxicology results found a blood alcohol of 0.10 percent and established that the victim was under the influence of alcohol.

The citation was terminated on September 15, 2006. All employees received Drug-Free Workplace Policy training and review of the requirements of the standard.

Approved by: \_\_\_\_\_  
Michael A. Davis  
Southeast District Manager

Date: \_\_\_\_\_



## APPENDIX A

### **Persons Participating in the Investigation**

#### **Mosaic Fertilizer, LLC**

|                     |  |
|---------------------|--|
| Dave Spedden        | mine manager                               |
| Willie C. Tims, Jr. | assistant vice president safety and health |
| Curt Wade           | geotechnical superintendent                |

#### **McDonald Construction Corporation**

|                      |   |
|----------------------|---|
| Dellwood McDonald    | safety director                             |
| Herman LaVonne Acorn | acting field supervisor for the present job |
| Paul Eugene Abbey    | maintenance supervisor                      |
| Aubrey Lee Pellom    | service truck operator                      |

#### **Polk County**

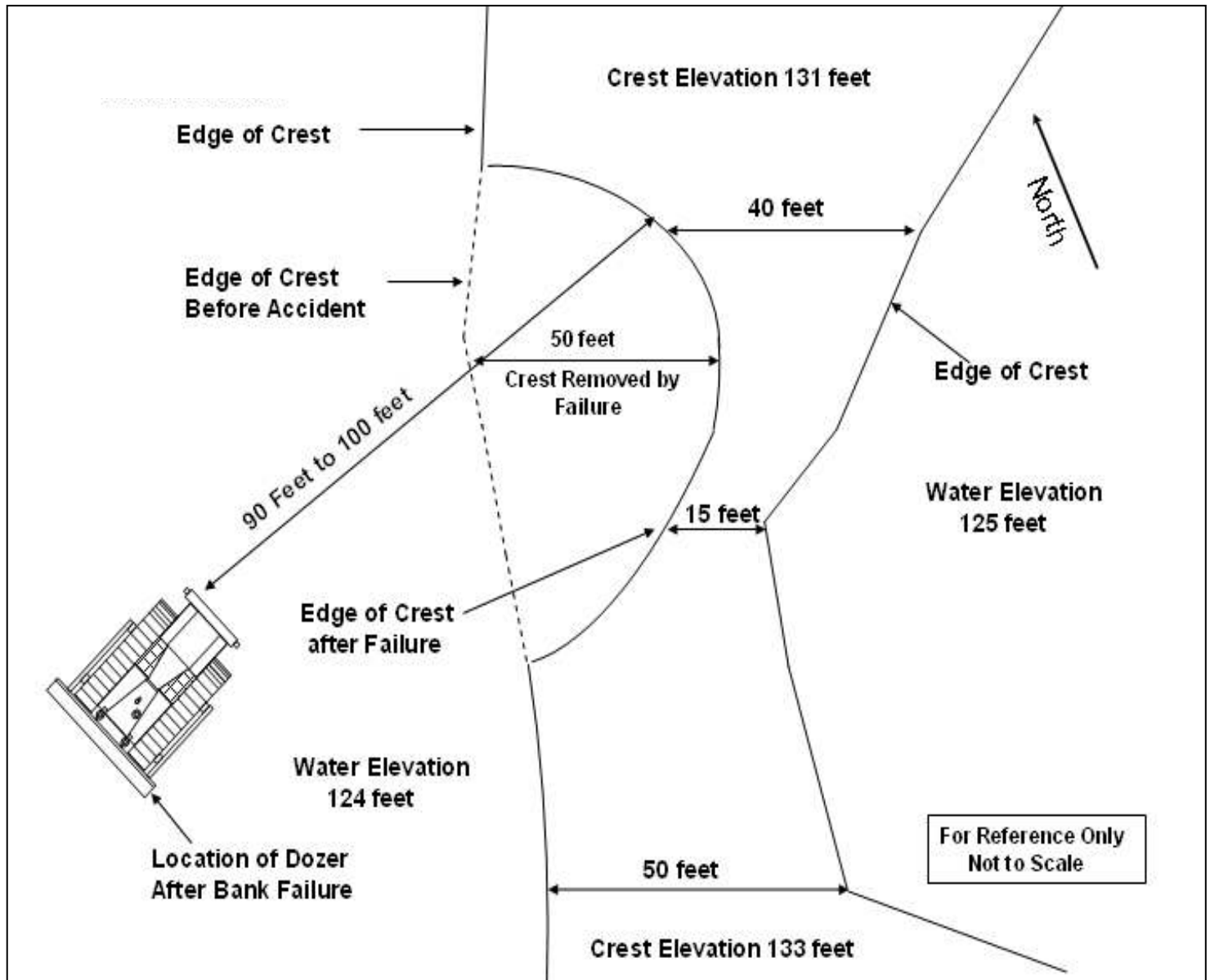
|                    |                              |
|--------------------|------------------------------|
| David Bright       | sheriff's deputy             |
| Dr. Stephen Nelson | coroner                      |
| Laurie Whipple     | emergency medical technician |
| Kim Brown          | emergency medical technician |

#### **Mine Safety and Health Administration**

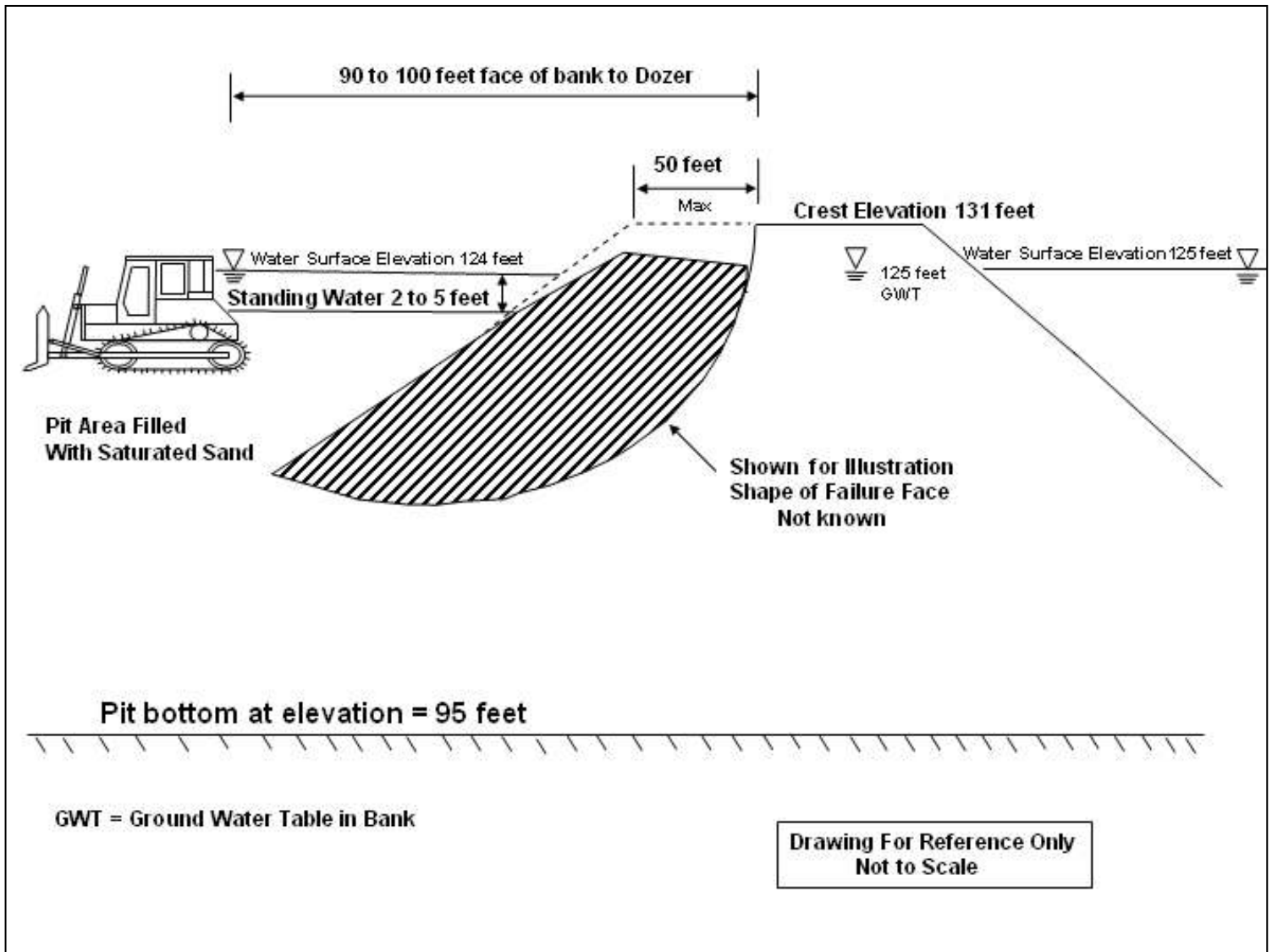
|                       |  |
|-----------------------|--|
| Donald B. Craig       | supervisory mine safety and health inspector |
| Curtis Roth           | supervisory mine safety and health inspector |
| Donald R. Baker       | mine safety and health inspector             |
| Jose J. Figueroa      | mine safety and health inspector             |
| Michael C. Superfesky | civil engineer P.E.                          |
| Alan Coburn           | mine safety and health specialist            |

## APPENDIX B

### Plan View of the Bank After the Accident



## Side View of the Bank After the Accident



## Diagram of the Potential Failure Scenarios

