

Investigation Report
Worker Fatality by Drowning
March 14, 2014

The contents of this report

This document reports Occupational Health and Safety's investigation of a fatal incident on March 14, 2014. It begins with a short summary of what happened. The rest of the report covers this same information in greater detail.

Incident summary

A 35 tonne excavator was parked on an ice surface in a borrow pit and was in the process of removing ice. The excavator broke through the ice and sank below the surface totally submerging the cab of the excavator in water. The operator of the excavator was inside the cab at the time of sinking. The operator was recovered but no vital signs were present. Cardiopulmonary resuscitation (CPR) was performed, and the operator was air lifted to the Northern Lights Regional Hospital where the operator was pronounced deceased.

Background information

The land owner of the location where the incident took place on March 14, 2014, was the Government of Alberta as it was crown land under the stewardship of Sustainable Resource Development.

Alberta Sustainable Resource Development (ASRD) received an application from Suncor Energy Inc. (Suncor) on October 29, 2009, for the purpose of removing soil to construct a resource road referred to as the East Athabasca Highway (EAH). There were a total of 13 borrow pits along the EAH to extract the required aggregate and soil. The borrow pit where the fatality took place was called borrow pit #2.

ASRD granted Suncor a Non-Public Pit Surface Materials Licence (SML) 090052, effective January 8, 2010 to January 7, 2011. Having completed the construction of the highway, Suncor was required to successfully reclaim the borrow pit which involved the moving of various types of soils and sloping of the borrow pit walls.

Suncor is a North American based energy company which is involved in the global production and processing of energy resources ranging from: oil sands production near Fort McMurray; oil refining facilities in Edmonton, Sarnia, Ontario, Montreal, Quebec and Commerce City, Colorado; wind energy generation in southern Alberta; as well as off shore oil and other energy projects worldwide. Suncor operates Canada's largest biofuels plant and generates retail gasoline and diesel sales through more than 1400 Petro Canada gas stations across Canada. Suncor is a publicly traded company on the Toronto Stock Exchange and New York Stock Exchange with its corporate head office located in Calgary, Alberta.

On February 3, 2014, Suncor entered into a contractual agreement with Brayford Trucking Ltd. (Brayford) to conduct the reclamation work on the borrow pits and also assigned Brayford the prime contractor role.

Brayford is a small privately owned corporation based out of Leduc, Alberta with staff numbers upwards of 20 employees during peak periods. Brayford specializes in bulldozer (dozer) and excavation work.

Brayford was contracted to undertake the following: open pit access, pit de-watering, removal of gravel pad along north side, removal of limestone piles along north side of borrow pit, woody debris re-salvage, topsoil and subsoil salvage and site recontouring. Brayford workers involved on site were: the construction superintendent, the site foreman, John Deere 3500 excavator operator (operator 1), John Deere 290 excavator operator (operator 2), John Deere 850 dozer operator (operator 3), and labourer 1.

Equipment and materials

Borrow Pit #2

Borrow pit #2 was located on Crown land located at LSD 32-093-9-W4M. The location was parallel to the EAH, near kilometre marker 16, north of Fort McMurray, Alberta (Figure 1). Borrow pit #2 was 240 metres (m) by 135 m with two access roads, each approximately 70 m in length and connected to the EAH from the northeast and northwest corners. The total area of borrow pit #2 was 3.81 hectares (Figure 2)

John Deere 3500 LC Excavator

The John Deere 3500 LC Excavator (JD 3500 excavator) was owned and operated by Brayford (Figure 3). The JD 3500 excavator was a piece of heavy construction equipment consisting of a boom, stick, bucket, and cab that rotated on a track platform. The JD 3500 excavator weighed 35,367 kilograms (kg) and had 271 horsepower. The height from the ground to the top of the cab was 3.14 m, the width of the tracks were 3.39 m, and the length of the arm was 3.2 m.



Figure 1. Worksite location taken from ASRD - Non-Public Pit SML 090052.

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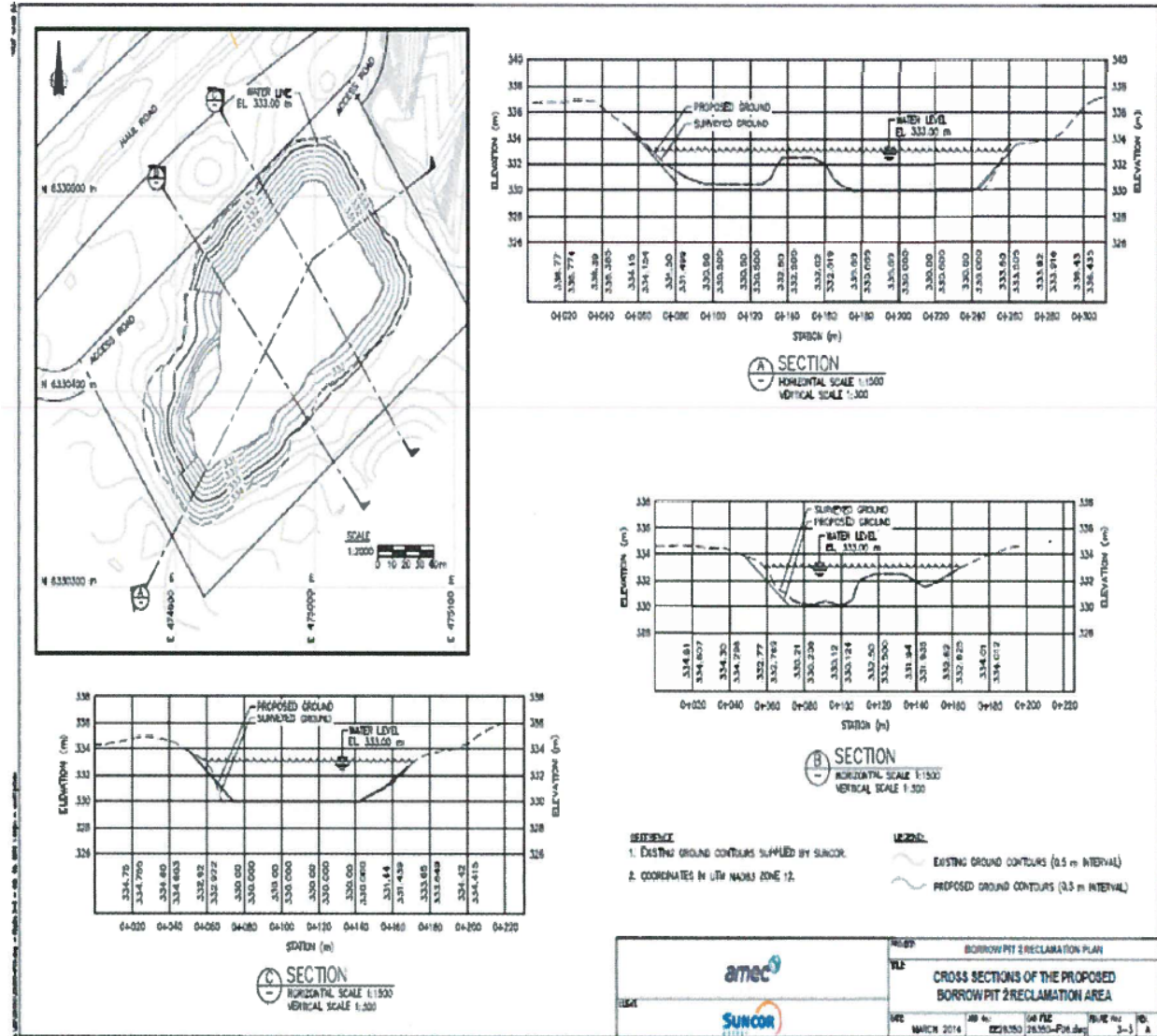


Figure 2. Engineering plan of borrow pit #2.



Figure 3. Recovered JD 3500 excavator

Sequence of events

On March 12, 2014, at about 6:30 a.m., a site kickoff meeting took place between Suncor reclamation staff, the site superintendent for Brayford and a soil technician from Golder Associates Ltd. (Golder). The meeting reviewed the documentation provided by AMEC Engineering to Suncor regarding the borrow pit reclamation. A site walk around tour was conducted. The weather was clear and calm and the temperature ranged from -1 Celsius to + 10 Celsius.

On March 13, 2014, at about 7:00 a.m., a site safety meeting took place at borrow pit #2. Present for the meeting were Brayford employees and a soil technician employed by Golder.

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At about 8:30 a.m., work began. A couple of Brayford workers used a chainsaw to cut an ice thickness test hole on the western portion of the pit. Workers used a survey lath to measure the depth and determined that the ice was about 60 centimetres (cm) thick and the water level was about 15 to 20 cm deep. The test hole was marked with survey lath to identify the opening.

The Brayford workers moved to the northeast area of the borrow pit and used a chainsaw to cut a second test hole in the ice. During the chainsaw cut, the crew uncovered mud and gravel and assumed they had located the bottom floor of the borrow pit.

At the same time as the ice thickness was being tested, heavy equipment operated by Brayford workers began excavation and earth moving work. A JD 850 dozer removed snow on the south bank; a second JD 850 dozer stripped and scraped snow off the northeast berm of the borrow pit. The JD 3500 excavator moved topsoil windrows on the pit towards the tree line. A JD 290 excavator removed snow from off the slope into the pit centre.

At about 1:30 p.m., the JD 290 excavator fed subsoil to the JD 850 dozer near the south corner of the pit. The JD 3500 excavator moved topsoil windrows into piles near the east access. The second JD 850 dozer stripped topsoil and subsoil in the north portion of the southeast side of the pit. The weather consisted of rain and snow. A slight wind was present. The temperature ranged from -4 Celsius to +2 Celsius.

At about 7:00 a.m. on March 14, 2014, workers arrived at the borrow pit #2 location. A tool box meeting was held. Present at the meeting were workers employed by Brayford and a soil technician employed by Golder.

A site observation tour of the borrow pit perimeter was conducted by the construction superintendent and site foreman for Brayford to determine how/where the excavator was going to gain entrance onto the eastern bowl.

At about 8:30 a.m., a JD 850 dozer ripped and graded the north part of the southeast slope. The second JD 850 dozer stripped soil and graded the south portion of the southeast slope of the pit. The JD 290 excavator moved material on the lower slope of the east corner and the JD 3500 excavator moved top soil and contoured the north slope of the pit.

In the early afternoon, the heavy equipment ripped soil, graded areas and sloped the sides of the borrow pit. At about 3:20 p.m., the JD 3500 excavator and the JD 290 excavator moved to new positions in the northeast corner of the pit. Operator 1 of the JD 3500 excavator met with operator 2 of the JD 290 excavator and the site foreman to discuss areas to strip and remove ice on the borrow pit floor. The excavator operators returned to their respective machines.

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Operator 2 in the JD 290 excavator took the lead position and maneuvered the JD 290 excavator in a counter clockwise position along the northwest corner of the pit towards the southwest corner. Operator 1 in the JD 3500 excavator maneuvered the excavator to follow the JD 290 excavator to a nearby position. The JD 290 excavator stopped east of the shore line on the ice of the borrow pit.

The JD 290 excavator broke ice chunks with its bucket, scooped up the ice and rotated the excavator to dump the ice chunks off to the side of the JD 290 excavator. The JD 3500 excavator maneuvered slightly to the northeast of the JD 290 excavator, about 15 m west of the northeast side slope and on the ice surface of the pit.

Shortly after 3:30 p.m., operator 2 in the JD 290 excavator scooped up some ice chunks and rotated the excavator 180 degrees to dump the ice chunks. Upon returning the JD 290 excavator to its original position facing northeast, operator 2 noticed the JD 3500 excavator was not visible. Operator 2 thought the JD 3500 excavator had moved further east up the slope embankment. Operator 2 then saw the exposed boom and bucket of the JD 3500 excavator sticking out of the ice. Operator 2 got on the radio and called that the JD 3500 excavator went through the ice.

Rescue efforts from Brayford's construction superintendent and site foreman allowed for the stabilization of the submerged JD 3500 excavator as well as the recovery of operator 1 from the sunken excavator.

Royal Canadian Mounted Police and emergency services were contacted. A helicopter was dispatched from Fort McMurray which took the unresponsive operator 1 to the Northern Lights Regional Hospital in Fort McMurray where operator 1 was pronounced deceased.

Completion

The entire Occupational Health and Safety investigation file was sent to Alberta Justice on March 10, 2015. Charges were laid on February 8, 2016. Brayford Trucking Ltd. pled guilty to Section 15(1) of the Occupational Health and Safety Regulation and Section 195(2) of the Occupational Health and Safety Code. At sentencing, on April 28, 2017, Brayford Trucking Ltd. was fined \$100,000 inclusive of the 15% victim fine surcharge. The company was also placed on corporate probation for a period of two years.

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Signatures

ORIGINAL REPORT SIGNED

January 29, 2018

Lead Investigator

Date

ORIGINAL REPORT SIGNED

January 22, 2018

Manager

Date

ORIGINAL REPORT SIGNED

January 24, 2018

Director

Date