

April 2, 2013

Reference No. 1114220016-504-L-Rev1

Remko Rosenboom, Section Head Water Allocations Branch, Lower Mainland Region Ministry of Forests Lands and Natural Resource Operations 10428 - 153rd Street, Suite 302 Surrey, BC V3R 1E1

Murray Manson, Habitat Biologist Fisheries and Oceans Canada Suite 200 - 401 Burrard Street Vancouver, BC V6C 3S4

NOTICE OF EMERGENCY WORKS | SLOPE FAILURE AT MANTLE CREEK | LAFARGE COQUITLAM SAND AND GRAVEL, COQUITLAM, BC

Dear Sirs:

Further to our March 18, 2013 written notification related to the slope failure at Mantle Creek within Lafarge Canada Inc.'s ("Lafarge") Coquitlam Sand and Gravel property on Pipeline Road in Coquitlam BC, please accept this letter as a status update of the Type 2 Emergency Work repairs undertaken by Lafarge. These works were carried out in accordance with the Standards and Practices for Instream Works (March 2004). Representative photos of these interim remedial repairs are included in Attachment 1.

The interim emergency work repairs undertaken to stabilize the slope failure and to control mobilization and release of sediments downstream included the activities described below.

1.0 PLACEMENT OF RIPRAP WITHIN THE FAILURE ZONE

On Monday March 25, 2013 Lafarge began placing approximately 500 tonnes of nominal 12" x 24" riprap. All rock was placed using an excavator with the help of a spotter to guide and direct the placement of the boulders. The riprap was placed to eliminate the plunging water from entering the failure zone and causing further bank erosion and instability. Lafarge is continuing to monitor the area for potential settlement and bank erosion, and will add more riprap if necessary, to minimize potential for plunging water from entering the erosion zone (Refer to Photographs 1 and 2).

2.0 DITCH EXCAVATION

Lafarge constructed a riprap and filter fabric lined diversion ditch to convey flows through culverts that pass under Pipeline Road. Beginning on March 23, 2013, Lafarge removed debris from the lower portion of the slope failure zone, and excavated the new ditch to convey Mantle Creek flows to the culverts under Pipeline Road. The ditch was lined with filter cloth and filled in with 12" x 24" riprap. The ditch will need to be completed once a new manhole and sump are constructed to replace a blocked culvert that could not be cleared. The fabric cloth was laid out by hand and then the riprap was placed using an excavator. Once water flows are directed through the ditch, additional riprap may be required to direct flows in the correct channel and to control velocities (Refer to Photograph 3).

> Golder Associates Ltd. 500 - 4260 Still Creek Drve, Burnaby, British Columbia, Canada V5C 6C6 Tel: +1 (604) 296 4290 Fax: +1 (604) 296 5253 www.golder.com Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

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3.0 DRAINAGE IMPROVEMENTS ALONG MANTLE CREEK

Lafarge is planning to install a new 30-inch diameter high density polyethylene (HDPE) above ground pipe, complete with steel anchor posts at 20-ft centres, to replace a blocked culvert and manhole assembly located downstream from the Mantle Creek failure zone. This will involve the following sequence of steps:

- 1) Hand clearing and construction of an access road along the pipeline corridor;
- 2) Removing an existing chain line fence;
- 3) Installing an above ground 30-inch diameter butt-fused HDPE outfall pipe complete with steel anchor posts at 20-ft centres;
- Installing a new precast concrete outlet headwall complete with grillage and an energy dissipator block at Pipeline Road;
- 5) Installing a 54-inch manhole over the existing pipeline into the existing manhole structure along the access road, including bypass pumping as required;
- 6) Abandoning the existing manhole structure; and
- 7) Replacing the chain link fencing, including legal surveying to ensure that the fence is on Lafarge property.

4.0 CLOSURE

Once the site is stabilized, Golder will evaluate longer term bank stabilization solutions on behalf of Lafarge to minimize bank erosion and sediment sources for maintaining downstream flows and water quality.

We trust that this summary provides sufficient information on the progress that Lafarge has made to date to control further bank erosion and instability along Mantle Creek based on the interim Type 2 Emergency Works as well as its commitment to develop longer term solutions.

Please do not hesitate to contact Kevin Tokarek, Operations Manager for Lafarge at (604) 455-6205, or the undersigned should you have any questions or wish to convene a site visit to inspect the interim remedial works.

Yours very truly,

GOLDER ASSOCIATES LTD.

ORIGINAL SIGNED

ORIGINAL SIGNED

Christopher Coles, P.Eng. Associate, Senior Water Resources Engineer Mark Bradshaw, P.Eng. Principal, Senior Geotechnical Engineer

ORIGINAL SIGNED

Don Gamble, RPP, R.P.Bio. Principal, Senior Environmental Planner

CC/MB/DBG/asd Attachment 1 - Photographs

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ATTACHMENT 1 Photographs



Photograph 1: March 28, 2013. Partial view of Mantle Creek failure zone and riprap placement.



Photograph 2: March 28, 2013. Partial view of Mantle Creek failure zone and riprap placement.





ATTACHMENT 1 Photographs



Photograph 3: March 28, 2013. View of ditch excavation, filter cloth (Geotextile) lined and riprap placement.

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April 16, 2013

Reference No. 1114220016-506-L-Rev0-5000

Remko Rosenboom, Section Head Water Allocations Branch, Lower Mainland Region Ministry of Forests Lands and Natural Resource Operations Suite 302, 10428 - 153rd Street Surrey, BC V3R 1E1

Murray Manson, Habitat Biologist Fisheries and Oceans Canada Suite 200 - 401 Burrard Street Vancouver, BC V6C 3S4

SUPPLEMENTARY EMERGENCY WORKS, SLOPE FAILURE AT MANTLE CREEK LAFARGE COQUITLAM SAND AND GRAVEL, COQUITLAM, BC

Dear Sirs:

Further to Golder Associates' March 18, 2013 and April 2, 2013 letters that described the recent slope failure at Mantle Creek within Lafarge Canada Inc.'s ("Lafarge") Coquitlam Sand and Gravel pit on Pipeline Road in Coquitlam BC and interim emergency works, please accept this letter as a status update of the Type 2 Emergency Work repairs undertaken and proposed by Lafarge. These works are being carried out in accordance with the Standards and Practices for Instream Works (March 2004).

1.0 EMERGENCY WORK CARRIED OUT TO DATE

The interim emergency work repairs were undertaken to stabilize the slope failure and to control mobilization and release of sediments from the slope failure zone at Mantle Creek.

A site plan showing the location of the Mantle Creek failure area is attached as Figure 1. Representative photographs of this area and interim remedial repairs are included in the attached Figure 2.

Work carried out to date includes the following operations:

- Lafarge placed approximately 500 tonnes of nominal 12" x 24" riprap into the failure zone from an existing access roadway located immediately upstream of the failure. The riprap was placed to eliminate the plunging water from entering the failure zone and reduce further bank erosion and instability. All rock was placed using an excavator with the help of a spotter to guide and direct the placement of the boulders.
- Lafarge constructed a diversion ditch at the Boneyard access roadway to convey the combined Mantle Creek/Fulton Creek flows within the north-south aligned portion of the "post-event flow path" shown in the Inset in Figure 1. The ditch was lined with filter cloth and 12" x 24" riprap.



The Mantle Creek failure resulted in the downstream transport of a large quantity of coarse sediment that blocked the manhole structure and buried the pipeline that extends southeastward from the Boneyard access road to the culvert that conveys the combined Mantle Creek/Fulton Creek beneath Pipeline Road. Preparatory work is currently being carried out to replace the blocked pipeline with a new inlet structure and buried HDPE pipeline to allow the discharge of clean flows to the Coquitlam River. However, the connection of this pipeline should be delayed until soil erosion is arrested within the Mantle Creek failure zone. Until that time, the combined Mantle Creek/Fulton Creek flows are being directed to the Office Pond and the onsite clarifying system for treatment prior to discharge.

2.0 SUPPLEMENTARY DRAINAGE IMPROVEMENTS AT MANTLE CREEK

Golder hydro-technical and geotechnical engineering staff inspected the Mantle Creek failure area and the works undertaken by Lafarge on April 8, 2013.

Heavy precipitation occurred on April 9 and 10, 2013, which resulted in high flows within Mantle Creek and further soil erosion, bank collapse and tree toppling within the Mantle Creek failure area.

Golder hydro-technical and geotechnical engineering staff re-inspected the Mantle Creek failure area on April 11, 2013 and recommended that the following work be carried out on an emergency basis to address this issue:

- Additional rockfill will be placed within the upper reaches of the failure zone to buttress the exposed steeply-sloping banks and reduce soil erosion at the headwall area;
- To gain access to the failure area, the few overhanging trees should be cut to reduce the danger to crews working in the area. The tree stumps should be left in place since the root system strengthens the surficial soils;
- The rockfill should be angular and well-graded (contain a wide range of particle sizes varying from gravel to boulders). The rockfill should be placed using a long-reach hydraulic excavator to form a wedge of interlocked rock fill at the base of the basin, extending up the banks and the headwall to buttress the side slopes of the erosion basin and prevent water from plunging into the headwall area of the basin. An estimated rockfill volume of approximately 1,500 to 2,500 cubic meters is expected to be required to buttress and protect the upper headwall area. Golder will carry out periodic environmental inspection of the work on an as-required basis;
- Once the supplementary rockfill is in place at the headwall area (expected to be substantially completed by April 22, 2013 or earlier), Golder hydro-technical/geotechnical staff will re-inspect the site to assess the effectiveness of the erosion protection work and determine the next steps in treatment of the remainder of the erosion basin. Golder anticipates that it will likely be necessary to apply additional rockfill treatment to the remainder of the failure area, which extends an estimated 60 to 80 m downstream from the gully headwall area to the confluence of Mantle Creek/Fulton Creek.



April 16, 2013

3.0 CLOSURE

Lafarge and Golder have been monitoring the area for further slope instability and bank erosion, and will continue to monitor the area.

Once the Mantle Creek failure zone is stabilized, Golder will evaluate longer term bank stabilization solutions on behalf of Lafarge to minimize bank erosion and sediment sources for maintaining downstream flows and water quality.

Golder trusts that this summary provides sufficient information on the progress that Lafarge has made to date to control further bank erosion and instability along Mantle Creek based on the interim Type 2 Emergency Works, as well as its commitment to develop longer term solutions.

Please do not hesitate to contact Kevin Tokarek, Operations Manager for Lafarge at (604) 455-6205, or the undersigned if you have any questions or require further information.

Yours very truly,

GOLDER ASSOCIATES LTD.

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Christopher Coles, P.Eng. Associate, Senior Water Resources Engineer Mark Bradshaw, P.Eng. Principal, Senior Geotechnical Engineer

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Don Gamble, MCIP, R.P.Bio. Principal, Senior Environmental Planner

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Attachments: Figure 1 – Mantle Creek Bank Failure Emergency Repair Figure 2 – Photographs (April 11, 2013) Mantle Creek Failure Area

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Looking upstream at Mantle Creek failure area from confluence of Mantle Creek/Fulton Creek. Note exposed soils on right, fallen trees on left and temporary bridge deck at upper center.



Looking downstream at Mantle Creek failure area from access road and temporary bridge deck.



Looking downstream at Mantle Creek failure zone. Note personnel standing on access road near crest of previous Fulton Creek restoration works (constructed in 2011).





Looking downstream at Mantle Creek/Fulton Creek confluence.



December 10, 2013

PROGRESSIVE RECLAMATION 2013 PROGRESS REVIEW

Coquitlam Sand and Gravel Privileged and Confidential

Submitted to:

Mr. Kevin Tokarek, CMA Operations Manager Lafarge GVA Aggregates 19633 - 98A Avenue Langley, BC V1M 3G5

Report Number: 1114220016-513-R-RevA

Distribution:

- 1 Copy Lafarge GVA Aggregates
- 1 Copy Lawson Lundell LLP
- 2 Copies Golder Associates Ltd.



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1.0 INTRODUCTION

Lafarge Canada Inc. (Lafarge) operates the Coquitlam Sand and Gravel (CSG) aggregate processing facility located on Pipeline Road in the City of Coquitlam, BC.

As requested by Lafarge, Golder Associates Ltd. (Golder) provided geotechnical and hydrotechnical engineering input to the reclamation activities carried out by Lafarge at the CSG site in 2013. The following report briefly summarizes the reclamation treatment carried out at the CSG site during 2013 as part of the overall Progressive Reclamation Plan for the site. This Plan will be periodically updated and refined based on assessment of the effectiveness of ongoing reclamation treatment.

The scope of this report is limited to the hydrotechnical and geotechnical engineering aspects of site reclamation only, and does not include any specific provisions for the investigation, testing or assessment of the potential presence or impact of soil or groundwater contamination at the site, or bioscience services.

2.0 BACKGROUND

The CSG site is situated on moderately to steeply-sloping terrain and is subject to high precipitation and run-off, particular during the wet winter months. This combination of soil exposures, steeply-sloping terrain, seasonally heavy precipitation and the high fines (silt and clay) content of the exposed sand and gravel deposits results in the potential for soil erosion and generation of sediment-laden surface water flows.

The CSG site is located within the lower Coquitlam watershed, which drains an area of approximately 79 km² and is incised through a thick sequence of sediments deposited during late Quaternary glacial advances (Armstrong, 1990). These sediments include glaciofluvial outwash sands and gravels, deltaic silts and fine sands, glaciomarine and glaciolacustrine clays and silts, and bouldery glacial till (NHC, 2011).

Lafarge's CSG mine comprises open pit aggregate processing and stockpiling facilities, sediment ponds and clarification facilities, sediment storage areas and haul roads. The Site has an area of approximately 87 ha, of which approximately 37 ha is currently in the preliminary stages of reclamation. The balance of the property is either undeveloped or reclaimed. Water originating from disturbed portions of the Site drains to the Clarifier Pond, where the water is treated prior to discharge to Partridge Creek and the Coquitlam River. In addition to drainage from disturbed portions of the Site, the clarifier pond also receives drainage from approximately 16 ha of vegetated lands which are either undeveloped or have been previously reclaimed and vegetated. Figure 1 is a Site Plan illustrating the salient features of the property, the Site watershed boundaries and notes regarding specific reclamation activities completed during 2013.

To improve the quality of runoff from the Site and reduce the volume of direct runoff, in 2012 Lafarge ceased mining operations at the majority of the site. Site reclamation activities, including slope grading and benching, re-vegetation of exposed cut and fill slopes through the planting of grass and trees, and the armouring of several drainage ditches to reduce soil erosion have been carried out in 2013. This work was carried out in general conformance with the recommendations provided by Golder (Golder, 2012).



3.0 REVIEW OF SITE CONDITIONS AND RECLAMATION ACTIVITIES

To supplement the progressive reclamation activities carried out at the CSG site in 2012, the following sections briefly describe reclamation activities carried out at CSG in 2013, including a pilot tree-planting program and other work undertaken at the Main Dig Site, the Red Bench Area and the Fines Storage Area as shown in Figure 1. The reclamation works completed in 2013 were carried out in general conformance with the principles outlined in the Health, Safety and Reclamation Code for Mines in British Columbia (Ministry of Energy, Mines and Petroleum Resources, Mining and Materials Division, 2008).

With the assistance of Lafarge personnel, three site inspections were carried out by Golder personnel on September 17, October 7 and October 16, 2013. The purpose of the site inspections was to assess site conditions and reclamation activities carried out during the 2013 construction season. Selected photographs are included in Appendix A, Figures A1 and A2.

3.1 Pilot Tree Planting Program

The establishment of deeply-rooted vegetation, such as trees and/or bushes, will assist in stabilizing cut and fill slopes, reduce soil erosion and improve runoff water quality. A pilot tree planting program was carried out during the late spring/early summer of 2013.

The initial pilot program involved the planting of approximately 10,000 trees (saplings) within three previously hydro-seeded areas with established grass cover (Figure A1 Photograph 1). These areas are located within the upper reaches of the Main Dig Site (western slopes), the upper reaches of the Red Bench Area, and the lower reaches of the Fines Storage Area (Figure 1). Test sites were selected in areas where future disturbance caused by site grading or excavation is not expected.

Lafarge obtained input from a qualified specialist (Carr Environmental Consultants) for the design, implementation and monitoring of the pilot tree planting program. Preliminary reports indicate that the success of the pilot tree planting program (in terms of plant survival) varied greatly within the three areas planted, with estimated survival rates ranging from greater than 90% within the Fines Storage Area to less than 20% in the Red Bench Area. The results of the pilot program and the performance of these plants in the different areas of the site will be used to inform and refine the planting plan as it is expanded in the future.

3.2 Main Dig Site

The Main Dig Site is a bowl-shaped pit located at the southwestern corner of the Site (Figure 1). The Main Dig Site has an area of approximately 9 ha consisting of a recent mining area (closed in 2012), the Main Haul Road, as well as undeveloped and previously reclaimed areas (5 ha). Surface water within the Main Dig Site converges at the pit floor and discharges into the ditches located on either side of the Main Haul Road, which eventually discharge to the Clarifier Pond. After mining ceased in this area in 2012, the area was hydro-seeded with grass seed. Reclamation measures carried out during 2013 included runoff conveyance improvements, grading, hydro-seeding and tree planting.





An interceptor cross-ditch and an access roadway are located mid-reach of the western slope. The cross-ditch conveys surface water runoff to a 500 mm diameter high density polyethylene (HDPE) pipe located on the south wall of the pit, which in turn conveys runoff to the base of the pit.

Gullying and groundwater seepage-related soil erosion and "piping" processes were observed within the lower reaches of the western slope, which resulted in the formation of piping voids and depressions on the slope face. Site observations indicated that these seepage related issues were likely related to water infiltration along the poorly graded and permeable mid-reach cross-ditch. To mitigate these issues:

- the ditch was smoothly graded over its entire length to the HDPE pipe discharge point;
- an approximately 0.5 m thickness layer of silt/clay material was placed and compacted in the base of the ditch for form a low permeability seal, and
- the surface of the ditch was covered with a nominal 0.3 m thickness layer of cobbles to reduce future soil erosion and ditch down-cutting (Figure A1 Photograph 2).

Lafarge excavated fine-grained soils from the plateau area located above the eastern pit slopes for use as impermeable cover material during reclamation of the upper reaches of the Fines Storage Area. After the excavation of the fine-grained cover material, this area was graded to promote drainage and hydro-seeded with grass seed (Figure A1 Photograph 3).

3.3 Red Bench Area

The Red Bench Area has a total area of approximately 11 ha, of which approximately 5 ha are undeveloped or previously reclaimed. The Red Bench Area drains eastward to the Clarifier Pond through a series of open ditches.

The upper (western) reach of the Red Bench Area was sloped, benched and hydro-seeded in 2012. A portion of the upper reach Red Bench area was planted with trees during 2013 as part of the Pilot Tree Planting Program. The lower (eastern) section of the Red Bench Area was sloped, benched and hydro-seeded in 2013 (Figure 1 and Figure A1 Photographs 4 and 5).

An eroded ditch located along the eastern edge of the Red Bench Area was re-established and armored with angular riprap in 2013 (Figure A1 Photograph 6).

3.4 Fines Storage Area

The Fines Storage Area comprises approximately 12 ha area and includes a series of stepped berms which permanently retain fines that were dredged from the Process Pond and the Clarifier Pond (Figure 1). Surface water runoff from each bermed cell drains to the next in a cascading fashion (from west to east), and then flows within a rockfill-lined channel to the Clarifier Pond. The lower half of the Fines Storage Area was hydro-seeded with grass in 2012.



The westernmost cell in the Fines Storage Area was filled and capped with fine-grained soil in 2013. The finished surface was seeded with SedimentLok; a seed, mulch and straw mixture prepared with a tackifier. This mixture was designed to provide erosion protection while the seeds germinate and form a root mat (Figure A2 Photograph 7).

Within the eastern half of the Fines Storage Area, disturbed areas were hydro-seeded (Figure A2 Photograph 8). A damaged rockfill-armored ditch located along the northern edge of the Fines Storage Area was repaired and reinstated. The reinstated ditch is approximately 1 m width at the base and 1 m depth, and is armored with angular riprap. Check dams were also installed at 5 m to 15 m spacing within this ditch (Figure A2 Photograph 9), and cobble-lined cross drains were installed at approximately 20 m spacing to intercept overland flows and direct them to the ditch (Figure A2 Photograph 10). A damaged section of the roadside ditch located along the southern edge of the Fines Storage Area was repaired with angular riprap.

4.0 SUMMARY

Golder confirms that significant progress was made during 2013 on the progressive reclamation of the former CSG aggregate processing facility. The 2013 reclamation work described herein, combined with rehabilitation of the slope failure that occurred within Mantle Creek (Golder, 2013), addressed minor deficiencies observed within previously-completed site restoration work and accomplished all major restoration activities planned for the site in 2013.

In consultation with Lafarge, Golder will work over the coming months to plan for the 2014 Progressive Reclamation program that will commence in Spring 2014.

5.0 CLOSURE

We trust that the above and attached information satisfies your immediate requirements. Please do not hesitate to contact the undersigned if you have any questions or would like to discuss these issues further.

GOLDER ASSOCIATES LTD.

Chris Coles, M.A.Sc., P.Eng. Associate/Senior Water Resource Engineer Mark T. Bradshaw, P.Eng. Principal/Senior Geotechnical Engineer

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COQUITLAM SAND AND GRAVEL PROGRESSIVE RECLAMATION 2013 REVIEW

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- Armstrong J. E. (1990). Vancouver Geology. Geological Association of Canada Cordilleran Section, Vancouver, BC.
- Golder (2012). Lafarge Coquitlam Sand and Gravel Mine, Recommended Erosion and Sediment Control Measures, report dated January 24, 2012.
- Golder (2012). Coquitlam Sand and Gravel, Progressive Reclamation Plan, DRAFT report dated August 15, 2012.
- Golder (2013). Notice of Emergency Work, Slope Failure at Mantle Creek, Lafarge Coquitlam Sand and Gravel, letter addressed to Remko Rosenboom, Ministry of Forests, Lands and Natural Resource Operations and Murray Manson, Fisheries and Oceans Canada dated April 2, 2013.
- Ministry of Energy, Mines and Petroleum Resources, Mining and Materials Division (2008). Health, Safety and Reclamation Code for Mines in British Columbia.

Northwest Hydraulic Consultants (2011). Coquitlam-Buntzen Water Use Plan – Lower Coquitlam River substrate quality assessment. 2010 – 2011 study period. Year 5 Final report prepared for BC Hydro and Power Authority, Burnaby, BC. May, 2012.





	STREAM
	SITE DRAINAGE
	COLVERY
	WATERSHED BOUNDARY
	DIRECTION OF FLOW
	DIPROVEMENTS TO SITE DRAINAGE
	APPHOXIMATE EXTENT OF 2013 PILOT THEE PLANNING PROGRAM
NOTÉ	

REFERENCE

B. ORTHOPHOTO AND TOPOGRAPHY PHOVIDED BY LAFARGE LAND MANAGUMENT DROLP IMAGERY, DATE NOVEMBER 15, 2013.

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COQUITLAM SAND AND GRAVEL COQUITLAM, B.C.



APPENDIX A1

Site Photographs 1 - 6





PHOTOGRAPH 1: SAPLINGS PLANTED WITHIN THE LOWER REACHES OF THE FINES STORAGE AREA AS PART OF THE PILOT TREE PLANTING PROGRAM.



PHOTOGRAPH 2: GRADED AND EROSION PROTECTED MID-REACH CROSS DITCH IN THE MAIN DIG SITE.



PHOTOGRAPH 3: GRADED AND HYDRO-SEEDED PLATEAU IN THE MAIN DIG SITE.



PHOTOGRAPH 4: GRADED AND HYDRO-SEEDED AREA WITHIN THE RED BENCH AREA.



PHOTOGRAPH 5: PILOT TREE PLANTING PLOT WITHIN A PREVIOUSLY HYDRO-SEEDED PORTION OF THE RED BENCH AREA.



PHOTOGRAPH 6: RE-ESTABLISHED AND ARMORED DRAINAGE DITCH WITHIN THE RED BENCH AREA.

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APPENDIX A2

Site Photographs 7 - 10

COQUITLAM SAND AND GRAVEL PROGRESSIVE RECLAMATION 2013 REVIEW





PHOTOGRAPH 8: HYDRO-SEEDING ON THE DISTURBED AREA WITHIN THE EASTERN HALF OF THE FINES STORAGE AREA.



PHOTOGRAPH 9: RE-ESTABLISHED AND ARMORED DRAINAGE DITCH WITH CHECK DAMS ALONG THE NORTH EDGE OF THE FINES STORAGE AREA.



PHOTOGRAPH 19: COBBLE LINED CROSS DITCHES IN THE EASTERN HALF OF THE FINES STORAGE AREA.

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Metcalfe, Megan MEM:EX

From:	Narynski, Heather M MEM:EX
Sent:	Monday, March 31, 2014 3:38 PM
То:	Dunkley, Jim R MEM:EX
Cc:	Chris Carr
Subject:	FW: Mantle Creek, Lafarge, Pipeline Road
Attachments:	image.jpeg; ATT00001.txt; image.jpeg; ATT00002.txt; image.jpeg; ATT00003.txt

Thanks Jim,

Chris Carr and myself will look into this further when we carry out our site inspection there next month. We may also follow-up with yourself for further information.

Heather

-----Original Message-----From: Dunkley, Jim R MEM:EX Sent: Monday, March 31, 2014 3:28 PM To: Narynski, Heather M MEM:EX Subject: Mantle Creek, Lafarge, Pipeline Road

Lafarge is reclaiming their Mantle Creek operations using settling pond fines. We were up there last week.









MINISTRY OF ENERGY AND MINES

Mines and Mineral Resources Division

REPORT OF GEOTECHNICAL INSPECTOR

(Issued pursuant to Section 15 of the Mines Act)

Name of Property:	Coquitlam Sand & Gravel	Permit No.: G-7-75 Mine # 0700468		
Mine Manager:	Jeevan Wadhawa			
Company: Address:	Lafarge Canada Inc. 1850 Pipeline Road Coquitlam, BC V3E 2P6			
Persons Contacted:	Jeevan Wadhawa			
Copies To:	George Warnock, Manager Geotechnical Engineering, MEM Eddy Taje, Inspector of Mines, Health & Safety, MEM Heather Narynski, Senior Geotechnical Inspector, MEM			
Date of Inspection:	April 28, 2014			
In this docume	nt, "Code" means the Health, Safety and Reclamation Code for Mine	s in British Columbia		

INTRODUCTION

An inspection of the Coquitlam Sand & Gravel Pit (aka Mantle Creek) was conducted by Chris Carr and Heather Narynski in the company of Eddy Taje (BC Ministry of Energy and Mines), Kevin Tokarek (Lafarge Operations Manager), Jennifer Wong (Lafarge Land Manager NW Division), Jeevan Wadhawa (Coquitlam Sand & Gravel Mine Manager) and Chris Coles (Golder Associates Water Resources Engineer).

Observations made during the inspection, and actions required to follow-up on this inspection report are summarized below.

The purpose of this inspection was as follows:

- To determine if the mine is meeting the requirements of the Code.
- To determine if geotechnical practices at the mine are consistent with generally accepted engineering practices at mines in British Columbia.
- To identify potential ground stability hazards or concerns at the mine.

OBSERVATIONS AND INSPECTION ORDERS

Meeting

A meeting was held prior to the site inspection to review plans for closure. Processing and washing operations shutdown in the fall of 2012. Site work is now related to reclamation efforts including reclamation of fine sediment storage area, bench re-sloping, surface water ditch construction and revegetation.

Geotechnical design standards, including stability of slopes and surface water control structures may depend on the end land use assigned to the mine site.

The approved end land use shall be confirmed (ref. Health, Safety and Reclamation Code, Section 10.7.4).

Slope Reclamation and Surface Water Control

It is understood that final benched slopes are designed at 2H:1V overall. Benching and reclamation has been completed on some slopes with local instability observed (Photo 1). The local slope failure appears to be shallow, involving surficial material placed for re-vegetation purposes that has become saturated by water. Standing water was noted on a bench above the failure area and may have contributed to the instability.

The failure area shall be stabilized and suitable surface water control measures constructed based on a design prepared by a qualified professional engineer.

Benching is planned this summer (Photo 2) and additional areas requiring re-sloping for long-term stability and erosion control were observed (Photo 3).

Surface water drainage is being reviewed as part of the closure plans and Golder Associates is providing design support.

A reclamation and closure report for reclamation activities conducted to date as well as reclamation plans for further areas shall be forwarded to the Ministry in accordance with Section 10.6.3 of the Health, Safety and Reclamation Code by August 7, 2014. The report shall include designs for final slopes, erosion control and surface water control, and reference the Reclamation Standards outlined in Section 10.7 of the Code.

Watercourses shall be reclaimed to a condition that ensures drainage is restored to either original watercourses or to new watercourses which will sustain themselves without maintenance (Section 10.7.12 of the Health, Safety and Reclamation Code). Pipes installed to convey surface drainage shall be removed.

Mantle Creek Slide

It is understood that a report was prepared for a landslide that occurred recently on Mantle Creek. The slide area has been remediated (Photo 4).

A copy of the report shall be forwarded to the Ministry by May 31, 2014 if this has not already been done.

Inventory of Dams

The Ministry is updating a database of mine dams (including sediment control ponds retaining structures) on a province wide basis.

Lafarge is requested to provide an inventory of all dams associated with sediment control or water storage facilities at the Coquitlam Sand & Gravel mine site. The inventory shall include:

- *the name of the facility,*
- Latitude and Longitude coordinates,
- *the maximum height of embankment (measured between the downstream toe and the embankment crest),*
- *the capacity of the impoundment,*

- an indication of whether or not the structure would be defined as a "major dam" or "major impoundment" under the Health, Safety and Reclamation Code (see page 10-2 of the Code),
- the Consequence classification using the BC Dam Safety Regulation (for non-major dams) or the CDA Dam Safety Guideline (for major dams),
- an indication as to whether or not a water license is required for the facility, and
- *date of the last external dam safety inspection.*

The requested information shall be submitted to the Ministry by May 31, 2014.

CLOSURE

Under Section 15 (6) of the Mines Act, a written response is required from the Mine Manager within 15 days of the receipt of this Inspection Report. In addition, Section 30 (1) of the Mines Act requires this Inspection Report to be posted in a conspicuous location at the mine site for 30 days.

Please feel free to contact the undersigned with any questions or comments.

Chris Carr, P. Eng. Geotechnical Mines Inspector On behalf of Ministry of Energy and Mines

Signature

Dated: May 7, 2014





COQUITLAM SAND & GRAVEL DAM INVENTORY

IN ACCORDANCE WITH THE BC MINISTRY OF MINES

Permit No. G-7-75 Mine # 0700468



Prepared By: Arun Wadhawa (B.Eng, Civil Engineering)

Prepared For:JEEVAN WADHAWA (Plant Manager Coquitlam S & G)BRITISH COLUMBIA MINISTRY OF MINES

Date of Submission:

May 22, 2014

An inspection of the Coquitlam Sand and Gravel Pit (mainly Mantle Creek) was conducted by Chris Carr, Heather Narynski, and Eddy Taje of the BC Ministry of Energy and Mines on May 7, 2014. The following information was requested no later than May 31, 2014:

- 1. Mantle Creek Slide Report
- 2. Inventory of Dams

This document is in response to the Ministry of Mines request so that updates can be made to the Ministry's database of "mine dams" (including sediment control ponds retaining structures). The following table depicts all of Lafarge's sediment control and water storage facilities at the Coquitlam Sand and Gravel mine site. Coordinates of Latitude and Longitude as requested were derived from, <u>http://itouchmap.com/latlong.html</u>.

Name of the Facility	Latitude	Longitude	Max. Height of Embankment (m)	Capacity (m ³)	Classification	Consequence Classification	Facility Purpose	
Main Seam Pond	49.324887	-122.778335	6	29,910.00	Non-Major Dam			Sediment Control
Ditch Line Structure	49.325977	-122.776955	3	2781.24		Low	Sediment Control	
Clarifier Pond	49.327163	-122.775798	9	20,218.05			Water Storage	
Enviro Pond	49.327199	-122.775123	5	2,059.50			Water Storage	
Office Pond (Large)	49.328382	-122.775144	12	14,383.20			Water Storage	
Office Pond (Small)	49.328391	-122.774528	5	895.79			Water Storage	

* Photos of each Pond can be seen at the end of this report

Dam classifications were completed in accordance with the "Health Safety and Reclamation Code for Mines in British Columbia, 2008." Furthermore, Consequence Classifications were established in accordance to the "B.C. Dam Safety Regulation - B.C. Reg. 163/2011, November 30th, 2011."

Part 10 of the Reclamation code (2008), defines the following:

- Major Dam: A Dam used to store and control water, slurry, or solids and has a height at any point that exceeds 15 m or is between 10 and 15 m in height with a crest length that exceeds 500 m, a flood discharge rate that exceeds 2000 m³/s or a reservoir capacity that exceeds one million m³, or any other dam so declared by the Chief Inspector.
- Major Impoundment: An impoundment that has a maximum depth of material greater than 10
 m at any point, or a maximum height of retaining dam or dike at any point that exceeds 15 m, or
 is a storage facility designed to contain more than one million m³ of material or is constructed

with dams or dikes that contain more than 50,000 m³ of fill, **or** any other impoundment or water management facility so declared by the Chief Inspector

In summary, the water sediment control and water storage ponds at Coquitlam Sand and Gravel, do not meet the minimum requirements presented in the context of the "Health, Safety, and Reclamation Code for Mines in British Columbia," part 10, to be listed as Major Dams/Impoundments as per the code.

Main Seam Pond (May 22, 2014)



Ditch Line Structure (May 22, 2014)



Clarifier Pond (May 22, 2014)



Enviro Pond (May 22, 2014)



Office Pond – Large (May 22, 2014)


Office Pond – Small (May 22, 2014)



Metcalfe, Megan MEM:EX

From:Narynski, Heather M MEM:EXSent:Wednesday, April 2, 2014 11:41 AMTo:Moody, Anne MEM:EXSubject:FW: Mantle Creek, Lafarge, Pipeline RoadAttachments:image.jpeg; ATT00001.txt; image.jpeg; ATT00002.txt; image.jpeg; ATT00003.txt

Hi Anne,

I'm not sure whether the three Pipeline Road Sand and Gravel operations located in the lower Mainland are on your radar for site inspection?

I just wanted to give you a heads-up that I will likely be heading there with Chris Carr at the end of this month if you wish to join. I have been informed that these operations have had some historical geotechnical issues and it was also recently brought to my attention that reclamation activities at the site have resulted in slope failures (attached photos).

-H

-----Original Message-----From: Dunkley, Jim R MEM:EX Sent: Monday, March 31, 2014 3:28 PM To: Narynski, Heather M MEM:EX Subject: Mantle Creek, Lafarge, Pipeline Road

Lafarge is reclaiming their Mantle Creek operations using settling pond fines. We were up there last week.

Metcalfe, Megan MEM:EX

From: Sent: To: Subject: Narynski, Heather M MEM:EX Wednesday, April 30, 2014 11:07 AM Taje, Eddy MEM:EX FW: Pipeline Road gravel pit inspections

FYI.

From: Chris Carr [mailtos.22Sent: Wednesday, April 30, 2014 10:21 AMTo: Narynski, Heather M MEM:EXCc: Warnock, George MEM:EXSubject: Pipeline Road gravel pit inspections

Hi Heather,

Further discussion and clarification is required concerning the following issues:

Design criteria for ditches /diversions

It is not clear what flood return criteria should be used for the design criteria of surface water control structures such as ditches, diversions and culverts during operation and for closure. This requires clarification. In my opinion the requirement to design all structures for a 1:200 year return period during mine operation is overly conservative and requires careful consideration including input from a hydrology specialist.

Dam/dyke structures

Most of the sediment control ponds at the gravel pits are excavations below ground surface in the Main Seam Gravel (very dense, over consolidated sand and gravel) with no or very low embankments. There are a few embankments that are likely to be classified as dams according to the CDA classification. The pit operators will be asked to provide information for the dam inventory. Eddy Taje mentioned that all dams at the Pipeline Road pits have previously been classified as "major dams" based on past correspondence (ref. G. Headley) from the Ministry. I would suggest that this be followed up since I have not seen it in the correspondence files.

<u>Permits</u>

It is not clear what the end land use is for the pits located on Pipeline Road. This has a direct bearing on geotechnical closure criteria and overall reclamation design. The pit operators were not sure whether the end land use is residential, forestry or parkland. I did find information in the Ministry files that suggest end land use is residential at some of the Allard pits. This should be clarified and I suggest that the end land use be specified in the updated permits.

A permit (dated November 1, 2013) has been issued for the Jack Cewe pit. The permit appears to have been developed using conditions from previous permits, some of which are out of date and no longer apply. Cewe representatives are very concerned that information they submitted to the Ministry was not considered following their review of the draft permit. Several conditions in the permit are related to geotechnical design and may not have been reviewed by MEM geotechnical staff.

There appears to be no permit authorization for the resloping/reclamation underway at the Coquitlam Sand & Gravel Lafarge Pit.

Reports submitted to the Ministry

It appears that reports may have been submitted by Coquitlam Sand & Gravel to the regional inspectors without the geotechnical section being informed. Examples include a Golder report on a slide that occurred on Mantle Creek and the 5-year mine plan submitted in 2011. There may be other report submitted as part of the reclamation plan for pit closure?

The status of annual reclamation reports and annual slope stability reports is not clear. The pit operators were unable to definitively state that reports have been submitted or when. A further search in the Ministry offices is required.

Regards,

Chris Carr, P.Eng. Senior Geotechnical Engineer Square Peg Enterprises Tel: 250 544-0763 Email: s.22

Metcalfe, Megan MEM:EX

From:	Chris Carr s.22
Sent:	Wednesday, May 7, 2014 3:10 PM
To:	'Jeevan Wadhawa'
Cc:	Warnock, George MEM:EX; Taje, Eddy MEM:EX; Narynski, Heather M MEM:EX
Subject:	Ministry of Energy & Mines inspection at Coquitlam Sand & Gravel
Attachments:	Coquitlam Sand & Gravel Inspection_May 7, 2014.pdf; Coquitlam Sand & Gravel Inspection_May 7, 2014.doc

Hi Jeevan,

I have attached my report for the geotechnical inspection completed at the Lafarge Pit on April 28, 2014. Please provide a written response to the inspection orders (shown in italics) within 15 days. A word document is included if needed for your response.

Regards,

Chris Carr, P.Eng. Senior Geotechnical Engineer On behalf of the BC Ministry of Energy and Mines Tel: 250 544-0763 Email: s.22

Metcalfe, Megan MEM:EX

From:	Chris Carr s.22
Sent:	Wednesday, April 30, 2014 10:21 AM
To:	Narynski, Heather M MEM:EX
Cc:	Warnock, George MEM:EX
Subject:	Pipeline Road gravel pit inspections
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Heather,

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Regards,

Chris Carr, P.Eng. Senior Geotechnical Engineer Square Peg Enterprises Tel: 250 544-0763 Email: s.22

Metcalfe, Megan MEM:EX

From:Narynski, Heather M MEM:EXSent:Wednesday, April 23, 2014 5:22 PMTo:Chris CarrSubject:Pipeline Road Reclamation Reports

Hi Chris,

I have had Jen (Reclamation Inspector) look through all their digital reclamation files. There is no record of any reclamation reports for any year for any of the Pipeline operations. She also searched in MMS as she indicated she has sometimes seen them filed there. There are also no hard copy reports for these operations in the back file room (as far as I can see). I will check with regional staff tomorrow as well, however, it seems if these documents exist, they have not been submitted to MEM.

Heather

Heather Narynski, P.Eng Sr. Geotechnical Inspector Ministry of Energy and Mines 1810 Blanshard St., Victoria, BC V8W 9N3 Wk: 250-387-0883 Cell: 250-893-3396

Metcalfe, Megan MEM:EX

From:	Narynski, Heather M MEM:EX
Sent:	Wednesday, April 30, 2014 3:44 PM
То:	Chris Carr
Cc:	Warnock, George MEM:EX
Subject:	RE: Pipeline Road gravel pit inspections

Thanks Chris,

I will follow-up with a phone call tomorrow.

-H

From: Chris Carr [mailto: s.22 Sent: Wednesday, April 30, 2014 10:21 AM To: Narynski, Heather M MEM:EX Cc: Warnock, George MEM:EX Subject: Pipeline Road gravel pit inspections

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Regards,

Chris Carr, P.Eng. Senior Geotechnical Engineer Square Peg Enterprises Tel: 250 544-0763 Email: s.22

BRITISH COLUMBIA The Best Place on Ear	Province of MINISTRY OF E PETROLEU Mining & I Report of In (Issued pursuant to S	British Columbia ENERGY, MINE JM RESOURCE Mineral Division aspector of Min Section 15 of the <i>Min</i>	a S AND S es nes Act)	inspection No.: File: Mine No.: Permit No.: Emp/Cont: Orders H&S: Stop Work:	18336 18080-02-02 0700468 G-7-75 0 / 0 0 RECL: 0 0
		nspection Report			a kan benar kanalakan kanala manan kana kanala kanala kana kana kana k
NAME OF MINE	MANTLE CREEK	LOCALITY		49.339, -122.750	
OWNER/OPERATOR	Lafarge Canada Inc. (Rayner Bracht Construction)	ADDRESS		COQUITLAM Mantle Creek Coquitlam BC V	'3E 3P6
MANAGER	Corey Mutter	AREAS INSPEC	CTED	Pit	
	Р	ersons Contacted		- 000 (1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 -	
MANAGEMENT	Greg Smith				
OHS COMMITTEE					
WORKERS		5			
 The haul ro required ha where more with adequa as a haul ro accordance of the Healt BC. A maj grade and n shall ensure shall be pro barriers at s compliance inspection (ad leading to the upper pit did n ul road width. Several sections to than 3 meter drop off exists are ate protection berm. This road s ad until it is operated and mainta with Section 6.9.1(2a) and Sect th Safety and Reclamation Code or stretch of that haul road has n ot provided with runaway lanes. that haul roads having more that vided with runaway lanes or reta- trategic locations where risk wa with Section 6.9.2 of the code. Inspection Report # 17065 dated	ot meet the of the road e not provided hall not be used ained in tion 6.9.1(2b) for mines in nore than 5% . The manager an 5% grade ardation rrants, in In a previous d October 27,			
Gerry Barcelonia		- Amil	seal ?		<i>2</i>
Inspector of Mines		Signature – Insp	ector of Mines		
6th Victoria BC V8W	9M9				en seuritetter
Address	a.	Signature – Man	ager		
Date of Inspection: 8 Copies To E	/12/2010 Taje	Dated:		M-100800000-1-00	, 20
	Aug 30, 2010			P	age 47 GM-2014-00069

INSPECTION ORDERS

2009), the same contraventions were noticed. This showed that the manager failed to comply or was unable to maintain the level of compliance as ordered. Consequently this action is an offense under **Section 35(b)** of the Mines Act, R.S.B.C. 1996,c.293(updated to 2007). Failure to rectify the above mentioned safety concerns in accordance with the code standard may be dealt with under **Section 35 & 37** of the Mines Act.

- 2. Trees were noticed at the edge of the haul road cut near the upper pit. The manager shall ensure that all trees and other vegetation, or other unconsolidated material lying within 2 meters of the rim of a working face or wall in a surface mine shall be removed, and beyond this distance all unconsolidated material shall be sloped to an angle less than the natural angle of repose in compliance with Section 6.23.1 of the code. This shall be complied within 30 days.
- 3. At the upper waste dump site, a truck driver dumped close to the edge without a dump person and inadequate dump berm. The manager shall not allow any person to drive or operate a haulage vehicle, in such a manner as to dump material from the vehicle over a bank that is more than 3 m high, or dump within 3 m of the dump berm crest when the bank is more than 3 m high, except as described in Section 6.10.1(4), unless a dump person is directing vehicles to the dumping position and a dump berm is in place in compliance with Section 6.20.3 of the code.
- 4. The manager was absent during the time of visit, and no written appointment was submitted to the inspector for the designate. This is in contravention to **Section 21** of the Mines Act. The Owner or agent shall ensure that a written notification is forwarded to the inspector immediately after the appointment of the manager or the person acting in that capacity.
- Greg Smith committed to forward a copy of the records of annual brake testing conducted on the hauling fleet for trucks of over 45,000 kgs GVW in compliance to Section 4.9.19 of the code. This shall be completed in 15 days.

MANAGERS RESPONSE OF ACTION TAKEN

I have contacted our fallers and have scheduled them to come perform this once the fire hazard ban has been lifted or the manager feels this task is safe to perform.

All haul truck operators have been trained previously on our procedures for operating a haul truck as well as the mines regulations. We have re reviewed these procedures .

In the managers absents a document will be posted at the site office stating the person acting in the manager's capacity, as well as an e-mail will be sent to the mining inspector.

A brake test has been preformed and documented on our haul trucks as all trucks past.

Date of Inspection

8/12/2010

Initials

(Inspector)

Initials

(Manager)

Page 48 EGM-2014-00069



Province of British Columbia MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES Mining & Mineral Division Report of Inspector of Mines

(Issued pursuant to Section 15 of the Mines Act)

«CID_N» inspection No.: File: «FILE_NO» «MINE_NO» Mine No.: «PERMIT_NO» Permit No.: «E / «CNT_NO» Emp/Cont: Orders H&S: «Н **RECL:** «RE «SHUT_CT» Stop Work:

«INSP_TITLE»			
«TITLE»		Signature – Inspector of Mines	
«REGADDR»			
Address		Signature – Manager	
Date of Inspection:	«INSP_DT»	Dated:	, 20
Copies To	«CPY_TO»		

BRITISH COLUMBIA The Best Place on Eart	Province of B MINISTRY OF EN PETROLEUM Mining & M Report of Insp h (Issued pursuant to Sec	ritish Columbia ERGY, MINES A RESOURCES ineral Division pector of Mines ction 15 of the <i>Mines</i>	AND File: Mine No. Permit N Emp/Con Orders S Act) Stop Wor	n No.: 18336 18080-02-02 : 0700468 o.: G-7-75 nt: 0 / 0 H&S: 0 RECL: 0 rk: 0
	lns	pection Report		
NAME OF MINE	MANTLE CREEK	LOCALITY	49.339,	-122.750
OWNER/OPERATOR	Lafarge Canada Inc. (Rayner Bracht Construction)	ADDRESS	COQUI Mantle Coquitl	ITLAM Creek am BC V3E 3P6
MANAGER	Corey Mutter	AREAS INSPECT	ED Pit	
	Daus	sons Contactad		
MANAGEMENT	Greg Smith	sons contacted		
OHS COMMITTEE	Greg Simil			
WORKERS				
A copy has been forwarded to th corrective actions taken by a spe replaced by a copy showing the	e Joint Occupational and Safety Committee and the i ecified date, and return a copy to the Inspector within manager's response. In this document, Code means F	union as applicable. The Mi 15 days of receiving the rep fealth, Safety and Reclamati	te manager shall complete ort. Further the manager s on Code for Mines in Britis	the right hand column noting specific shall post a copy to the bulletin board, to be sh Columbia.
During the inspection 1. The haul road required haud where more with adequate as a haul road accordance wo of the Health BC. A majod grade and non- shall ensure shall be prove barriers at stu- compliance wo inspection (In- Gerry Barcelonia	INSPECTION ORDERS on the following deficiencies were d leading to the upper pit did not l road width. Several sections of than 3 meter drop off exists are n the protection berm. This road sha d until it is operated and maintair with Section 6.9.1(2a) and Section in Safety and Reclamation Code for r stretch of that haul road has mon- the provided with runaway lanes. The that haul roads having more than with Section 6.9.2 of the code. In nspection Report # 17065 dated C	e noticed; 7 meet the the road of provided all not be used ned in on 6.9.1(2b) or mines in re than 5% The manager 5% grade dation ants, in n a previous October 27,	IANAGERS RESPO his has been comple ,	NSE OF ACTION TAKEN 'ted
Inspector of Mines		Signature – Inspecto	or of Mines	
6th Victoria BC V8W 9	M9	······		
Address		Signature – Manage	г	
Date of Inspection: 8/I Copies To E.	2/2010 Taje Aug 30, 2010	Dated:		Page 50 EGM-2014-00069

INSPECTION ORDERS

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Date of Inspection

8/12/2010

Initials

(Inspector)

Initials

(Manager)

Page 51 EGM-2014-00069



Province of British Columbia MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES Mining & Mineral Division

Report of Inspector of Mines (Issued pursuant to Section 15 of the Mines Act) inspection No.: «CID_N» File: Mine No.: Permit No.: Emp/Cont: «E Orders H&S: «H Stop Work:

«FILE_NO» «MINE_NO» «PERMIT_NO» / «CNT_NO» **RECL:** «RE «SHUT_CT»

«TITLE»		Signature – Inspector of Mines	
«REGADDR»			
Address		Signature – Manager	
25			
Date of Inspection:	«INSP_DT»	Dated:	, 20
Copies To	«CPY TO»		8

Pages 53 through 55 redacted for the following reasons: Not Responsive

#07004



Coquitlam Sand & Gravel 1850 Pipeline Road Coquitlam, B.C. V3E 3P6 Office: (604) 945-8946 Fax: (604) 945-8982

AGGREGATES, CONCRETE & ASPHALT

March 14, 2012

Annual Reclamation Report

Mr. Ed Taje,

As per the mining permit for Coquitlam sand and Gravel I am sending you this letter as an update for our annual reclamation report. During 2011 CSG completed a major repair and reclamation on the Fulton creek waterway. We installed new culverting that continued the water flows through the existing valley where it connects to Mantle Creek. The pipe had been placed on and is buried under a combination of rip rap and 3-6" round rock. Golder Associates prepared the project and will continue to monitor the repair throughout 2012. We hydro seeded our overburden which was located along the upper outer boundary of the property and rip rapped the waterway that runs along the upper pit area as well. The roadway located along the south boundary (beside Partridge Creek) has been upgraded. We have rocked the slope and placed lock blocks along the outer edge of the roadway as well as graded the road to the inside. These measures will help prevent any water runoff. If you require any further information please feel free to contact me.

Thank you, Corey Mutter Manager Coquitlam sand and gravel

MAAA





Coquitlam Sand & Gravel 1850 Pipeline Road Coquitlam, B.C. V3E 3P6 Office: (604) 945-8946 Fax: (604) 945-8982 0700468

AGGREGATES, CONCRETE & ASPHALT

Ministry of Energy and Mines

Mr. Ed Taye

January 18,2012

I wanted to address the concerns from January 4,2012, it was the 3rd day of heavy rains experienced at Coquitlam Sand & Gravel and at 5am one of our main pumps failed. The foot valve broke making the pump ineffective. This prevented us from pumping water from our office pond into our clarification system where water can be treated and discharged. We took immediate action to repair the pump to make it operational again and by 8am we were able to start pumping water again. We have a spare pump on-site however the decision was made to repair the pump as opposed to replacing it due to the weather conditions. To replace the pump is approximately an 8-10 hour job. The 3 hour delay caused our system to fall behind in management of the water system. If the office pond is over capacity the water then starts going through a set of weirs and through the discharge point. This discharge point is permitted but is only used in case of an emergency where there is too much water in the system. The water started entering these weirs and out this discharge point intermittently beginning at 11:00 AM until 6:00 PM when we were able to get the water levels back to manageable levels.

We have a preventative maintenance program in place for regular inspections on our pumps to avoid failures. Our maintenance program includes:

Regular inspections of every pump within our system. The inspection schedule varies depending if the plant is operational or not. The plant has been shut down since December 23rd and the last inspection on this pump was December 28th.

90 Day preventative maintenance program. This includes oil sampling and changing if needed as well as a full pump inspection to identify any wear points or defects that require repair.

During our flood watch there are regular inspections to ensure the pumps are working properly. This is when we identified the problem at 5 AM on January 4th.

We have retained Golder to review our water management system and make any recommendations they see will help with our water control and discharge.

Lafarge is committed to maintaining clean water at our discharge points at or below the allowable levels. This is evident through the work that was completed in 2011 including:

Repairs completed to fix the Fulton creek and mantle creek sediment issues. The repair has so far shown all signs of being successful and we will continue to monitor along with Golder.

Rip Rap along ditch lines to protect against erosion.

• Page 2

Hydro seeding in various areas including stripping area, ditch lines, above current mining area, and in Fulton area to stabilize faces and allow for clean run off water.

Replacement of pump at clarifier pond to improve efficiency of the system.

Capacity increase to our clarifying system for treatment of water.

Increasing the depth of our ponds and frequency in our maintenance of keeping them dug out.

Increasing frequency of maintaining ditch lines to avoid transport of sediment.

These improvements have had a positive result in addressing the concerns raised over both Mantle Creek and Partridge Creek.

Lafarge is committed to ensuring that we are in full compliance with the federal *Fisheries Act*. This project is tangible proof of Lafarge's commitment and willingness to comply with the federal *Fisheries Act*.

Should you have any questions or would like to have a conversation to discuss further do not hesitate to contact me.

Thank you, Corey Mutter Manager Coquitlam sand and gravel

In Mato

Inspection NAME OF MINE MANTLE CREEK OWNER/OPERATOR Lafarge Canada Inc. (Rayner Bracht Construction) MANAGER Corey Mutter Persons C MANAGEMENT Corey Mutter-manager / Shane Whitbread-shift OHS COMMITTEE WORKERS A copy has been forwarded to the Joint Occupational and Safety Committee and the unio specific corrective actions taken by a specified date, and return a copy to the Inspector wi bulletin board, to be replaced by a copy showing the manager's response. In this docume INSPECTION ORDERS A mine inspection was conducted on September 14, 2012 and noticed that several sections of the main haul road did not have adequate shoulder barrier as per code requirement. During this inspection the main haul road was ordered closed until all shoulder berms are brought into compliance. The same contravention was also noticed on the following inspection reports; Inspection # 17065, 18336, 20360.	n Report LOCALITY ADDRESS AREAS INSPECTED Contacted ftboss	49.339, -122.750 COQUITLAM Mantle Creek Coquitlam BC V3E 3P6 Pit er shall complete the right hand column noting t. Further the manager shall post a copy to the Berdamation Code for Mines in British Columbia.
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1	MAIN HAUL HAVE BEEN MEET THE	ROAD BERMS RAISED TO REQUIREMENTS
 Section 6.9.1(2b) Mine Haul Road Design "The manager shall ensure that haulage roads are designed, constructed and maintained to provide (b) a shoulder barrier (i) at least 3/4 of the height of the largest tire on any vehicle hauling on the road, (ii) of a construction or a specification that is in general conformance to accepted engineering practice, (iii) located and maintained along the edge of the haulage road wherever a drop-off greater 	OF THE C	-D=

Inspector of Mines

6th Floor Victoria BC V8W 9N3

Address

Date of Inspection: 9/14/2012

Copies To

Signature – Inspector of Mines

1 m in

Signature - Manager

10/03/12 Dated: OCTOBER 03

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INSPECTION ORDERS

MANAGERS RESPONSE OF ACTION TAKEN

than 3 m exists,"

It was noticed that the main ramp towards the upper pit digging area has a drop off of more than 3 meters on both sides, did not have adequate shoulder barrier. This section of the haul road shall not be used until it is provided with adequate shoulder berms on both sides having a height of at least ³/₄ the height of the largest tire on any vehicle used on this road. The manager is reminded that the berms shall be maintained while this section of the road is used as a haul road.



2. Section 6.9.1(2b) Mine Haul Road Design

"The manager shall ensure that haulage roads are designed, constructed and maintained to provide (b) a shoulder barrier

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(ii) of a construction or a specification that is in general conformance to accepted engineering practice, (iii) located and maintained along the edge of the haulage road wherever a drop-off greater

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Several sections of the main haul road stretching from the rock dump corner up to the second switch back that leads to the upper pit digging area, did not have adequate shoulder barrier. This section of the haul road shall not be used until it is provided with adequate shoulder berms on both sides having a height of at least ³/₄ the height of the largest tire on any vehicle used on this road. The manager is reminded that the berms shall be maintained while this section of the road is used as a haul road. In pursuant to Section 6.9.1(1), the manager shall submit within 15 days a plan that shows an "as built" design and method of construction for haulage roads at the mine. was e-mailled to the Inspector on 09/20/12

All shoulder berms have been raised to meet requirements.

Date of Inspection

9/14/2012

Initials

(Inspector)

Initials

(Manager)

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Report of Inspector of Mines Page 3 of 3

INSPECTION ORDERS

3. Section 6.20.3 Dumping Over Bank

"No person shall drive or operate a haulage vehicle, in such a manner as to dump material from the vehicle over a bank that is more than 3 m high, or dump within 3 m of the dump berm crest when the bank is more than 3 m high, except as described in section 6.10.1(4), unless a dump person is directing vehicles to the dumping position and a dump berm is in place." It was noticed that haul trucks were dumping over a bank at a soil dump that is more than 3m high. The manager shall not allow dumping within 3m from the edge of the bank at any stockpile dump that is over 3 m high unless as prescribed on this section of the code.

4. Section 6.20.3 Dumping Over Bank

"No person shall drive or operate a haulage vehicle, in such a manner as to dump material from the vehicle over a bank that is more than 3 m high, or dump within 3 m of the dump berm crest when the bank is more than 3 m high, except as described in section 6.10.1(4), unless a dump person is directing vehicles to the dumping position and a dump berm is in place." The red dump and the rock dump did not have adequate dump berms. The manager shall not allow dumping at these stockpiles until adequate dump berms are in place.

MANAGERS RESPONSE OF ACTION TAKEN

The haul truck drivers have been instructed not to dump over the edge if higher than 3m.

Adequate dump berns have been put in place.

Date of Inspection

Initials

(Inspector)

(Manager)

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BRITISH COLUMBIA E	inistry of vergy and Mines	Province of B Ministry of M	ritish Columbia f Energy and ines	Inspection No.: File: Mine No.: Permit No.:	23024 18080-02-09 0700468 G-7-75
	(1	Report of Ins ssued pursuant to Se	pector of Mines ction 15 of the Mines Act)	Emp/Cont: Orders H&S: Stop Work:	0 / 0 1 RECL: 0 0
999		Inspecti	ion Report		
NAME OF MINE	MANTLE CREEK		LOCALITY	49.339, -122.750 COQUITLAM	
OWNER/OPERATOR	Lafarge Canada Inc. Construction)	. (Rayner Bracht	ADDRESS	Mantle Creek Coquitlam BC V3E	3P6
MANAGER	Corey Mutter		AREAS INSPECTED	Pit area and Fluton C	Sreek
	and a second	Persons	Contacted	and a second	and the second secon
MANAGEMENT OHS COMMITTEE WORKERS	Corey Mutter				
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In An inspection	NSPECTION ORDER	S	MANAGERS RESPONS	E OF ACTION TAK	TEN
I met with Corey Mut need for compilation of comprehensive packag Minutes and historic i Diversion. The docum also took me on a tour	ter on site. Our discuss of permit amendments ge. We reviewed rece nformation regarding ments on that project we of the site.	ssions regarded the s into one ent Safety Meeting the Fulton Creek vere complete. Corey	DO NOT MODIFY TH	IS TEXT	
During the inspection down from the upper p concern was directed a runaway lane for this l determined that the cu	we discussed the hau most active portion of around the potentially haul road. After further rrent Runaway Lane	l road which comes the site. My not suitable er review, it has been is not adequate.	We have s this area mining th this area.	topped m and m ne peak	wed to North d
Michael Olsen			Da		
Inspector of Mines PO Box 9395, Stn Prov (Address	Govt Victoria BC V8W	9M9	Signatury – Inspector of Mines	<u> </u>	
Date of Inspection: 4/1 Copies To		2 D 2012	Dated: <u>May</u>	4	,20 12
	Ministry of Er	ergy and Mines		Pag EGI	ge 62 M-2014-00069

Report of Inspector of Mines Page 2 of 2

INSPECTION ORDERS

MANAGERS RESPONSE OF ACTION TAKEN

SECTION :6.9.2 Vehicle Runaway Protection

The runaway lane provided is not adequate. It is not separate from other vehicular traffic, it is located after the switchback and is located where there is potential to meet other traffic. This is a contravention of 6.9.2 of the Health, Safety and Reclamation Code for Mines in British Columbia. The manager shall ensure that on roadways where the grade exceeds 5% runaway lanes or retardation barriers exist. The runaway protection shall provide protection suitable for the type and size of loaded haul truck. It shall be used exclusively for this purpose, designed by a professional and located before the switchback. Plans shall be forwarded to our office prior to construction. This shall be completed in 6 weeks.

*Note:

Until such time as construction has commenced, the pick-up truck access provided at the switch back may be used as temporary runaway protection provided that it is closed to all other traffic and it is modified to temporarily suit this purpose without endangering the safety other persons on site. We will not have any traffic coming from the original mining area. We will neview possible options far a revised runaway lane or retardation barnier.



Initials

(Inspector)

Initials

(Manager)

Page 63 EGM-2014-00069

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		Province of	British Columbia	Inspection No.:	24054
BRITISH Ministry of COLUMBIA Energy and Mines		N/1:	C 17	File:	18080-02-02
		Wilnistry o	of Energy and	Mine No.:	0700468
		N	Iines	Permit No.:	G-7-75
	Co.	Report of In	spector of Mines	Emp/Cont:	0 / 0
		Account of the	Spector of winnes	Orders H&S:	0 RECL: 0
	,	issued pursuant to 3	ection 15 of the mines Act	Stop Work:	0
	No Je	Inspec	tion Report		
NAME OF MINE	MANTLE CREEK	<	LOCALITY	49.339, -122.750	
				COQUITLAM	
OWNER/OPERAT	OR Lafarge Canada In	c. (Rayner Bracht	ADDRESS	Mantle Creek	
	Construction)			Coquitlam BC V3E	3P6
MANAGER	Corey Mutter		AREAS INSPECTED	Pit	
		Person	e Contacted		
ANAGEMENT	Corey Mutter-man	ager / Shane Whithread-	shifthoss		
)HS COMMITTEE		uger , onalie minoreau .	51110055		
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a copy has been forward specific corrective action pulletin board, to be rep	ted to the Joint Occupational an as taken by a specified date, and laced by a copy showing the ma	id Salety Committee and the u return a copy to the Inspector nager's response. In this doci	r within 15 days of receiving the repo ument, Code means Health, Safety an	ter shall complete the right rt. Further the manager s d Reclamation Code for M	t hand column noting shall post a copy to the Aines in British Columbia.
	INSPECTION ORDE	RS	MANAGERS RESPONS	E OF ACTION TAI	KEN
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етту Barcelonia		,	Tomulu		
spector of Mines			Signature – Inspector of Mines	3	3
th Floor Victoria B	C V8W 9N3		linno		
and tool a locolid DV			INYTHIN		

Address

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Date of Inspection: 9/14/2012

Copies To

Signature – Manager

Dated: 10/03/12 OCTOBER 03

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Report of Inspector of Mines Page 2 of 3

INSPECTION ORDERS

MANAGERS RESPONSE OF ACTION TAKEN

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All shoulder berms have been raised to meet requirements.

Date of Inspection

9/14/2012

Initials

(Inspector)

Initials

(Manager)

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Report of Inspector of Mines Page 3 of 3

INSPECTION ORDERS

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MANAGERS RESPONSE OF ACTION TAKEN

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Adequate dump berns have been put in place.

Date of Inspection

Initials

(Inspector)

(Manager)



January 5, 2012

Murray Manson Department of Fisheries and Oceans 100 Annacis Parkway, Unit 3 Delta, BC V3M 6A2



Ministry of Energy and Mines

Mr. Manson,

Lafarge is committed to working with you and ensuring that we are in full compliance with the federal *Fisheries Act*. To that aim we enclose a project completion report by Golder Associates Ltd. ("Golder") regarding the work done on Mantle Creek earlier this year. This project is tangible proof of Lafarge's commitment and willingness to comply with the federal *Fisheries Act*.

I wanted to address your site visit yesterday. Yesterday was the 3rd day of heavy rains experienced at Coquitlam Sand & Gravel and at 5am one of our main pumps failed. The foot valve broke making the pump ineffective. This prevented us from pumping water from our office pond into our clarification system where water can be treated and discharged. We took immediate action to repair the pump to make it operational again and by 8am we were able to start pumping water again. This 3 hour delay caused our system to fall behind in management of the water system. If the office pond is over capacity the water then starts going through a set of weirs and through the discharge point observed by you. This discharge point is permitted but is only used in case of an emergency where there is too much water in the system. The water started entering these weirs and out this discharge point intermittently beginning at 11:00 AM until 6:00 PM when we were able to get the water levels back to manageable levels.

We have a preventative maintenance program in place for regular inspections on our pumps to avoid failures. Our maintenance program includes:

- Regular inspections of every pump within our system. The inspection schedule varies depending if the plant is operational or not. The plant has been shut down since December 23rd and the last inspection on this pump was December 28th.
- 90 Day preventative maintenance program. This includes oil sampling and changing if needed as well as a full pump inspection to identify any wear points or defects that require repair.
- During our flood watch there are regular inspections to ensure the pumps are working properly. This is when we identified the problem at 5 AM on January 4th.

We have retained Golder to review the items raised in your December 12th letter. We took some immediate action to replace the rock berm at the bottom of the ditch line along our main haul



road with a lock block berm. You were concerned that this berm could be washed out during heavy rain events. Although we have never experienced this type of failure we eliminated the risk. We will address your other concerns with Golder's help shortly.

Lafarge is committed to maintaining clean water at our discharge points at or below the allowable levels. This is evident through the work that was completed in 2011 including:

- Repairs completed to fix the fulton creek and mantle creek sediment issues. The repair has so far shown all signs of being successful and we will continue to monitor along with Golder.
- Rip Rap along ditch lines to protect against erosion.
- Hydro seeding in various areas including stripping area, ditch lines, above current mining area, and in fulton area to stabilize faces and allow for clean run off water.
- Replacement of pump at clarifier pond to improve efficiency of the system.
- Capacity increase to our clarifying system for treatment of water.
- Increasing the depth of our ponds and frequency in our maintenance of keeping them dug out.
- Increasing frequency of maintaining ditch lines to avoid transport of sediment.

These improvements have had a positive result in addressing the concerns raised over both Mantle Creek and Partridge Creek.

We wish to keep the lines of communication open with your department so that we can work together as improvements are implemented.

Should you have any questions or would like to have a conversation to discuss further do not hesitate to contact me.

Regards,

Kevin Tokarek Operations Manager, GVA Aggregates

BRITISH COLUMBIA	Ministry of Energy and Mines (Province of B Ministry of M Report of Insp Issued pursuant to Sec	ritish Columbia F Energy and ines pector of Mines ction 15 of the <i>Mines Act</i>)	Inspection No.: File: Mine No.: Permit No.: Emp/Cont: Orders H&S: Stop Work:	23024 18080-02-09 0700468 G-7-75 0 / 0 1 RECL: 0 0
		Inspecti	on Report		
NAME OF MINE	MANTLE CREEK		LOCALITY	49.339, -122.750 COQUITLAM	
OWNER/OPERAT	OR Lafarge Canada Inc Construction)	c. (Rayner Bracht	ADDRESS	Mantle Creek Coquitlam BC V3E	3P6
MANAGER	Corey Mutter		AREAS INSPECTED	Pit area and Fluton (Creek
and and a second se		Persons	Contacted	e maand on and the second	
MANAGEMENT	Corey Mutter				
OHS COMMITTEE	E				
WORKERS		101			
A copy has been forward specific corrective action bulletin board, to be rep	ded to the Joint Occupational an as taken by a specified date, and laced by a copy showing the mar	d Safety Committee and the un return a copy to the Inspector v ager's response. In this docum	ion as applicable. The Mine manag within 15 days of receiving the repor uent, Code means Health, Safety and	er shall complete the righ t. Further the manager s I Reclamation Code for M	t hand column noting hall post a copy to the lines in British Columbia.
	INSPECTION ORDER	RS			
An inspec	ction was conducted on M	arch 18, 2012.	MANAGERS RESPONS	E OF ACTION TAE	KEN
I met with Corey I need for compilati comprehensive pa Minutes and histo Diversion. The do also took me on a	Mutter on site. Our discu- ion of permit amendmen ckage. We reviewed rec ric information regarding cuments on that project tour of the site.	issions regarded the ts into one cent Safety Meeting g the Fulton Creek were complete. Corey	DO NOT MODIFY TH	IS TEXT	
During the inspect down from the up concern was direc runaway lane for t determined that th	tion we discussed the har per most active portion of ted around the potentiall his haul road. After furth e current Runaway Lane	ul road which comes of the site. My y not suitable her review, it has been is not adequate.	We have s this area mining th this area.	topped m and m ne peak	wed to North of
Michael Olsen Inspector of Mines PO Box 9395, Stn P Address Date of Inspection: Copies To	rov Govt Victoria BC V8W 4/18/2012 JUN	7 9м9 EIVED 2 b 2012	Signature - Inspector of Mines Signature - Manager Dated: May	<u> </u>	, 20 <u>12</u>
	Ministry of E	nergy and Mines		EG	M-2014-00069

INSPECTION ORDERS

SECTION :6.9.2 Vehicle Runaway Protection

The runaway lane provided is not adequate. It is not separate from other vehicular traffic, it is located after the switchback and is located where there is potential to meet other traffic. This is a contravention of 6.9.2 of the Health, Safety and Reclamation Code for Mines in British Columbia. The manager shall ensure that on roadways where the grade exceeds 5% runaway lanes or retardation barriers exist. The runaway protection shall provide protection suitable for the type and size of loaded haul truck. It shall be used exclusively for this purpose, designed by a professional and located before the switchback. Plans shall be forwarded to our office prior to construction. This shall be completed in 6 weeks.

*Note:

Until such time as construction has commenced, the pick-up truck access provided at the switch back may be used as temporary runaway protection provided that it is closed to all other traffic and it is modified to temporarily suit this purpose without endangering the safety other persons on site.

MANAGERS RESPONSE OF ACTION TAKEN

We will not have any traffic coming from the original mining area. We will neview possible options for a revised runaway lane or retardation barrier.

Date of Inspection



Initials

(Inspector)

Initials

(Manager)

BRITISH BRITISH COLUMBLA Energy and Mines (Issu	Province of Br Ainistry of Mi Report of Insp red pursuant to Sec	ritish Columbia Energy and nes pector of Mines tion 15 of the <i>Mines Act</i>)	 Inspection No.: File: Mine No.: Permit No.: Emp/Cont: Orders H&S: Stop Work: 	26416 18080-02-02 0700468 G-7-75 0 / 0 0 RECL: 0 0
	Inspectio	n Report	and the second	
NAME OF MINE MANTLE CREEK		LOCALITY	49.339, -122.750 COQUITLAM	
OWNER/OPERATOR Lafarge Canada Inc. (R Construction)	ayner Bracht	ADDRESS	Mantle Creek Coquitlam BC V3E	3P6
MANAGER Kelly Worth		AREAS INSPECTED	Pit & crusher	
in the second	Persons C	Contacted	a a anna ann an Anna a	·
MANAGEMENT Kelly Worth				
OHS COMMITTEE				
WORKERS				
A copy has been forwarded to the Joint Occupational and Saf specific corrective actions taken by a specified date, and retur bulletin board, to be replaced by a copy showing the manager	ety Committee and the unio n a copy to the Inspector wi 's response. In this docume	on as applicable. The Mine manage ithin 15 days of receiving the repor- ent, Code means Health, Safety and	er shall complete the right t. Further the manager sh Reclamation Code for M	hand column noting hall post a copy to the ines in British Columbia.
INSPECTION ORDERS		MANAGERS RESPONSI	E OF ACTION TAK	EN
A mine inspection was conducted on June 21, the following deficiencies;	2013 and noticed	Plastic guardi	ng removed	and replaced
 Surge feed conveyor – The tail pulle was not effectively guarded. This sec conveyor shall not be operated until a has been installed in accordance to se the code. 	y of this conveyor ction of the an effective guard ction 4.4.16(6) of	with expand	ed metal gu	ands
 Traffic plan – A section of the haul n pit was less than twice the width of th manager shall ensure that if widening impractical, a traffic control procedur developed to ensure safe travel of the compliance with section 6.9.1(2a) of shall be complied with immediately. 	oad to the loading e road. The the road is e shall be haul trucks in the code. This	Road Widened able to safel	to ensure " i pass each	other
 Run away lane – The upper section of was more than 5% grade. The manag at a strategic location runaway lanes of 	of the haul road er shall establish or retardation	Run away lar section of road	u established	l along flat barcier
		- Andrew		
Inspector of Mines		Signature - Inspector of Mikes		

6th Floor Victoria BC V8W 9N3

Address

Date of Inspection: 6/21/2013

Copies To

Signatore - Inspector of Mines VXX Signature – Manager

Dated:

.20 13

Page 71 EGM-2014-00069

Report of Inspector of Mines Page 2 of 2

INSPECTION ORDERS

barriers as per section 6.9.2 of the code.

- 4. Loader back up alarm- at the stockpile area the loader back up alarm was not functional during the visit. The loader shall be provided with a back up alarm as per section 4.9.1 of the code.
- Switch gear box at the MCC the switch box shall be 5. provided with a cover as per section 5.1.1 of the code. This shall be complied with immediately.
- 6. Dust collector the grinder at the shop shall not be operated until it is provided with suitable dust collector as per section 4.4.3(8) of the code.
- 7. **Grinder mount** – the work rest of the grinder was more than 3 mm. This grinder shall be adjusted in accordance with section 4.4.3(5) of the code. This shall be complied with immediately.
- Securing HP bottle A high pressure bottle at the 8. shop was standing not secured. The manager shall ensure that all HP bottles when not in used shall be secured as per section 4.4.7(2a) of the code.

MANAGERS RESPONSE OF ACTION TAKEN

Back alarm toas been repaired and tested

Cover has been installed.

Hoses installed to collect dust

Mount rest distance checked with New grinder and was withing 3mm (wheel) Bottle moved to designated extinder storage and secured

Date of Inspection



(Inspector)

(Manager)

Page 72 EGM-2014-00069

BRITISH BOLUMBIA Er	inistry of ergy and Mines Report of Insj (Issued pursuant to Sec	ritish Columbia f Energy and ines pector of Mines ction 15 of the <i>Mines Act</i>	Inspection No.: File: Mine No.: Permit No.: Emp/Cont: Orders H&S:) Stop Work:	26416 18080-02-02 0700468 G-7-75 0 / 0 0 RECL: 0 0	
Inspection Report					
NAME OF MINE	MANTLE CREEK	LOCALITY	49.339, - 122.750 COQUITLAM		
OWNER/OPERATOR	Lafarge Canada Inc. (Rayner Bracht Construction)	ADDRESS	Mantle Creek Coquitlam BC V3E	3P6	
MANAGER	Kelly Worth	AREAS INSPECTED	Pit & crusher		
Persons Contacted					
MANAGEMENT	Kelly Worth				
OHS COMMITTEE					
WORKERS					
A copy has been forwarded to specific corrective actions tak bulletin board, to be replaced	be the Joint Occupational and Safety Committee and the une en by a specified date, and return a copy to the Inspector of by a copy showing the manager's response. In this docum	ion as applicable. The Mine manage within 15 days of receiving the repo nent, Code means Health, Safety an	ger shall complete the right ort. Further the manager s ad Reclamation Code for M	hand column noting hall post a copy to the ines in British Columbia.	
 11	SPECTION ORDERS	MANAGERS RESPONS	E OF ACTION TAK	(EN	
 A mine inspection was conducted on June 21, 2013 and noticed the following deficiencies; 1. Surge feed conveyor – The tail pulley of this conveyor was not effectively guarded. This section of the conveyor shall not be operated until an effective guard has been installed in accordance to section 4.4.16(6) of the code. 		Plastic guarding removed and replaced with expanded metal guards.			
 Traffic plan – A section of the haul road to the loading pit was less than twice the width of the road. The manager shall ensure that if widening the road is impractical, a traffic control procedure shall be developed to ensure safe travel of the haul trucks in compliance with section 6.9.1(2a) of the code. This shall be complied with immediately. 		Road widened to ensure trucks are able to safely pass each other			
3. Run away la was more tha at a strategic	ne – The upper section of the haul road n 5% grade. The manager shall establish location runaway lanes or retardation	Run away lane established along flat section of roadway with & bartier			
Gerry Barcelonia		- Knitiw			
Inspector of Mines		Signature - Inspector of Mine	S		

6th Floor Victoria BC V8W 9N3

Address

Date of Inspection:

Copies To

6/21/2013

Signature - Manager

Page 73 EGM-2014-00069

. 20 3

Report of Inspector of Mines Page 2 of 2				
INSPECTION ORDERS		MANAGERS RESPONSE OF ACTION TAKEN		
4.	barriers as per section 6.9.2 of the code. Loader back up alarm- at the stockpile area the loader back up alarm was not functional during the	Back alarm toos been repaired		
	visit. The loader shall be provided with a back up alarm as per section 4.9.1 of the code.	Cover has been installed.		
5.	Switch gear box – at the MCC the switch box shall be provided with a cover as per section $5.1.1$ of the code. This shall be complied with immediately.			
6.	Dust collector – the grinder at the shop shall not be operated until it is provided with suitable dust collector as per section 4.4.3(8) of the code.	Hoses installed to collect ausi		
7.	Grinder mount – the work rest of the grinder was more than 3 mm. This grinder shall be adjusted in accordance with section 4.4.3(5) of the code. This shall be complied with immediately.	Mount rest distance checked with new grinder, and was withing 3mm (wheel)		
8.	Securing HP bottle - A high pressure bottle at the shop was standing not secured. The manager shall ensure that all HP bottles when not in used shall be secured as per section 4.4.7(2a) of the code.	Bottle moved to designated extinder storage and secured		

6/21/2013

Initials

(Inspector)

,Es

(Manager)

Page 74 EGM-2014-00069


Friday, March 26, 2010

File: 18080-02-02 Mine No.: 0700468

Corey Mutter Mine Manager Mantle Creek 1850 Pipeline Rd Coquitlam BC, V3E 3P6

Dear Sir:

Re: Mine Inspection March 23, 2010 Property: MANTLE CREEK

Enclosed are two copies of my Inspection Report for the above noted property and date.

Please have this report posted in a conspicuous place on the property accessible to the workers in accordance with Section 30(1) of the Mines Act.

As noted on page one of the report, please fill in the appropriate areas responding to the Inspector's comments, sign and date the first page, initial the subsequent page(s) and return a copy with your comments to the writer.

Yours truly,

Emmanuel R. Padley Inspector of Mines, Electrical

Enclosures

Ministry of Energy, Mines and Petroleum Resources

Mining & Minerals Division

7th Floor. 1675 Douglas Street Victoria Telephone : (250) 371 6063 Facsimile : (250) 371 6070

7th Floor. 1675 Douglas Street Victoria



Province of British Columbia MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES Mining & Mineral Division Report of Inspector of Mines

 Inspection No.:
 17597

 File:
 18080-02-02

 Mine No.:
 0700468

 Permit No.:
 G-7-75

 Emp/Cont:
 18 / 2

 Orders H&S:
 8 RECL:
 0

 Stop Work:
 0

The Best Place on Eart	h (Issued pursuant to Section	n 15 of the <i>Mines Act</i>)	Stop Work: 0	
Inspection Report				
NAME OF MINE	MANTLE CREEK	LOCALITY	49.339, -122.750 Coquitlam	
OWNER/OPERATOR	Lafarge Canada Inc. (Rayner Bracht Construction)	ADDRESS	Mantle Creek Coquitlam BC V3E 3P6	
MANAGER	Corey Mutter	AREAS INSPECTED	Plant, Shop, Crusher	
	Persons	Contacted		
MANAGEMENT	Corey Mutter, Greg Smith			
OHS COMMITTEE				
WORKERS				
A copy has been forwarded to t specific corrective actions taken bulletin board, to be replaced b	he Joint Occupational and Safety Committee and the uni by a specified date, and return a copy to the Inspector v y a copy showing the manager's response. In this docum	ion as applicable. The Mine man vithin 15 days of receiving the rep nent, Code means Health, Safety a	ager shall complete the right hand column noting ort. Further the manager shall post a copy to the ınd Reclamation Code for Mines in British Columbia.	
INS	SPECTION ORDERS	MANAGERS RESPON	SE OF ACTION TAKEN	
Inspections were carried inspections were condu Mines, Electrical. Durin concern were noted and	ed out on March 23, 2010. The cted by Emmanuel Padley Inspector of ng the inspections the following items of l orders written:			
2.2.1 Workplace to Be Housekeeping in the ele attention. There is clutte lamps stored in the room	Hazard Free ectrical switch rooms is in need of er, combustibles and old fluorescent ms.			
The manager shall imm unnecessary materials r	ediately have the rooms cleaned and all emoved.			
4.2 Electrical Equipm On the day of this inspe electrical room emerger tour all doors to the electrical M421-00 Use of Electric excessive than the electric	ent Rooms CSA M421-00 ection it was noted that the crusher ney light was not working. During the ctrical rooms were open. As per 4.2.1 of icity n Mines if temperatures become rical rooms shall be vented. At the very			
		£ 10 1		
Emmanuel R. Padley		Symanuel Vacle	¥	
Inspector of Mines, Electrica	1	Signature – Inspector of Min	les	
162 Oriole Road Kamloor	os BC V2C 4N7			
Address		Signature – Manager		

Date of Inspection:3/23/2010Copies ToEd Taje

-

Dated:

, 20

INSPECTION ORDERS MANAGERS RESPONSE OF ACTION TAKEN least the doors should be closed to not allow dust and moisture to enter the electrical rooms. 4.2.1 General The location, construction, and installation of a room containing electrical equipment shall ensure the best practical protection against fire propagation, water and dust ingression, and corrosive atmospheres. Electrical rooms shall be sufficiently ventilated to maintain equipment at safe temperatures. 4.2.2 Illumination Lighting levels shall be sufficient to enable all equipment to be clearly distinguished and all instruments and labels to be easily read. Where a personnel hazard would be caused by a failure of the lighting system, an emergency lighting system shall be provided. The manager shall ensure that the electrical rooms maintain safe operating temperatures. The manager shall ensure that precautions are taken to prevent water and dust from entering the switch rooms. 5.1.1 Codes and Standards The lighting plants on the minesite were not properly grounded. The lighting plant had a ground rod on board but was not being used.

5.1.1

Unless modified by this code, all electrical equipment shall be installed, maintained and operated in accordance with CSA Standard M421-00 Use of Electricity in Mines, in conjunction with the Canadian Electrical Code, as amended from time to time.

The manager shall immediately ensure that the lighting plants are grounded in an approved manner.

4.4.2 Moving Parts of Machinery

Rather than guard areas where workers can come into contact with rotating equipment, access to these areas are restricted by signage requiring lock out before entering. In one of the areas (log roller) the signage had not been put back up, in the cone crusher (during a maintenance day) the switches were locked out on the deck. In order to get to the cone deck you once again had to pass one of the "no entry without locking out" signs. On the same deck was a control for a pump panel that appears that an operator would need to adjust position.

4.4.2

Unless situated so as to prevent a person coming into accidental contact with it, every drive belt, chain, rope or pulley, sprocket, flywheel, geared wheel and every opening through which any belt, pulley or wheel operates, and every bolt, key, set screw and every part of any wheel or other revolving part that projects unevenly from the surface shall be effectively enclosed,

Date of Inspection

3/23/2010



Initials

(Inspector)

Initials

Report of Inspector of Mines Page 3 of 3

INSPECTION ORDERS

MANAGERS RESPONSE OF ACTION TAKEN

covered, or guarded.

If these areas are to be no entry unless locked out, the manager shall ensure that these procedures are in writing and that the same procedures are strictly adhered to. The manager shall immediately ensure that all workers are trained and the training is documented for these safe work procedures.

2.2.1 Workplace to Be Hazard Free

The stairway to the "log roller" and the cone deck had substantial product spillage on or around them.

2.2.1

The manager shall develop and implement an effective housekeeping program to ensure that all workplaces and travel ways are maintained in a safe condition, that materials and equipment are stored in a manner so as not to endanger persons. and that appropriate action is taken whenever necessary to maintain a hazard-free environment.

The manager shall immediately have these areas cleared and walkways maintained so as not to endanger workers in the area.

3.2.2 Supervision and Work CSA M421-00

On the day of inspection a worker was changing a fuse for a 3 phase motor in the crusher MCC. The worker was not an electrician.

3.2.2.1 CSA M421-00

Only authorized persons shall work on or be in charge of electrical equipment or systems.

Definitions from Health Safety and Reclamation Code; "authorized person" means a qualified person appointed or designated by the manager to perform specified duties;

"qualified person" means a person who, in the opinion of the manager, is

(a) qualified because of the person's knowledge, training and experience to design, organize, supervise and perform the duties for which the person is appointed,

(b) familiar with the provisions of this Act, the code and the regulations that apply to the duties for which the person is appointed, and

(c) capable of identifying any potential or actual danger to health or safety in the workplace;

Workers who are not electrical trained, who are performing electrical work, would have to prove qualifications to perform this type of work. With the introduction of Arc Flash standards with regards to procedures, testing and clothing requirements mean even electrical workers are requiring more training. The manager shall provide this writer with training documentation to support the authorization of the worker to perform this type of work on the electrical system. To be remedied within 7 days.

Date of Inspection

3/23/2010

Page 78

EGM-2014-00069

(Manager)

Initials

(Inspector)

Initials



Monday, August 16, 2010

File: 18080-02-02 Mine No.: 0700468

Lafarge Canada Inc. (Rayner Bracht Const Mantle Creek Coquitlam BC, V3E 3P61850 Pipeline Rd

Dear Sir:

Re: Mine Inspection August 12, 2010 Property: MANTLE CREEK

Enclosed are two copies of my Inspection Report for the above noted property and date.

Please have this report posted in a conspicuous place on the property accessible to the workers in accordance with Section 30(1) of the Mines Act.

As noted on page one of the report, please fill in the appropriate areas responding to the Inspector's comments, sign and date the first page, initial the subsequent page(s) and return a copy with your comments to the writer.

Yours truly,

Gerry Barcelonia Inspector of Mines

Enclosures

Mining & Minerals Division

PO Box 9320, Stn Prov Govt Victoria, BC V8W 9N3 Telephone: Facsimile: 6th Floor. 1810 Blanshard Street Victoria







Province of British Columbia MINISTRY OF ENERGY, MINES PETROLEUM RESOURCES Mining & Mineral Division Report of Inspector of Mine (Issued pursuant to Section 15 of the Min		British Columbia NERGY, MINES AND M RESOURCES lineral Division pector of Mines ection 15 of the <i>Mines Act</i>)	Inspection No.: File: Mine No.: Permit No.: Emp/Cont: Orders H&S: Stop Work:	18336 18080-02-02 0700468 G-7-75 0 / 0 0 RECL: 0 0
	Ins	spection Report		
NAME OF MINE	MANTLE CREEK	LOCALITY	49.339, -122.750 COQUITLAM	0
OWNER/OPERATOR	Lafarge Canada Inc. (Rayner Bracht Construction)	ADDRESS	Mantle Creek Coquitlam BC	V3E 3P6
MANAGER	Corey Mutter	AREAS INSPECTED	Pit	
	Per	rsons Contacted		
MANAGEMENT	Greg Smith			
OHS COMMITTEE				
WORKERS				
A copy has been forwarded to t corrective actions taken by a sp replaced by a copy showing the	the Joint Occupational and Safety Committee and the becified date, and return a copy to the Inspector withi manager's response. In this document, Code means	e union as applicable. The Mine manage n 15 days of receiving the report. Furth Health, Safety and Reclamation Code f	er shall complete the right h her the manager shall post a or Mines in British Columb	and column noting specific a copy to the bulletin board, to be pia.
	INSPECTION ORDERS	MANAG	ERS RESPONSE OF	ACTION TAKEN
During the inspecti	on the following deficiencies we	re noticed;		
 The haul ros required hau where more with adequa as a haul ros accordance of the Healt BC. A majo grade and n shall ensure 	ad leading to the upper pit did no al road width. Several sections o than 3 meter drop off exists are no the protection berm. This road sh ad until it is operated and maintain with Section 6.9.1(2a) and Secti h Safety and Reclamation Code for or stretch of that haul road has mo ot provided with runaway lanes.	t meet the f the road not provided all not be used ined in on 6.9.1(2b) for mines in ore than 5% The manager n 5% grade		

 Gerry Barcelonia
 Address

 Inspector of Mines
 Signature – Inspector of Mines

 6th Victoria BC V8W 9M9
 Signature – Manager

 Address
 Signature – Manager

 Date of Inspection:
 8/12/2010

 Copies To
 E. Taje

shall be provided with runaway lanes or retardation barriers at strategic locations where risk warrants, in compliance with **Section 6.9.2** of the code. In a previous

inspection (Inspection Report # 17065 dated October 27, 2009), the same contraventions were noticed. This showed that the manager failed to comply or was unable to maintain the level of compliance as ordered. Consequently this action is an offense under **Section 35(b)** of the Mines Act, R.S.B.C. 1996,c.293(updated to 2007). Failure to rectify the above mentioned safety concerns in accordance with the code standard may be dealt with under **Section 35 & 37** of the Mines Act.

- 2. Trees were noticed at the edge of the haul road cut near the upper pit. The manager shall ensure that all trees and other vegetation, or other unconsolidated material lying within 2 meters of the rim of a working face or wall in a surface mine shall be removed, and beyond this distance all unconsolidated material shall be sloped to an angle less than the natural angle of repose in compliance with Section 6.23.1 of the code. This shall be complied within 30 days.
- 3. At the upper waste dump site, a truck driver dumped close to the edge without a dump person and inadequate dump berm. The manager shall not allow any person to drive or operate a haulage vehicle, in such a manner as to dump material from the vehicle over a bank that is more than 3 m high, or dump within 3 m of the dump berm crest when the bank is more than 3 m high, except as described in Section 6.10.1(4), unless a dump person is directing vehicles to the dumping position and a dump berm is in place in compliance with Section 6.20.3 of the code.
- 4. The manager was absent during the time of visit, and no written appointment was submitted to the inspector for the designate. This is in contravention to **Section 21** of the Mines Act. The Owner or agent shall ensure that a written notification is forwarded to the inspector immediately after the appointment of the manager or the person acting in that capacity.
- Greg Smith committed to forward a copy of the records of annual brake testing conducted on the hauling fleet for trucks of over 45,000 kgs GVW in compliance to Section 4.9.19 of the code. This shall be completed in 15 days.

Date of Inspection

8/12/2010

1

Initials

(Inspector)

Initials

BRITISH COLUMBIA The Best Place on Eart	Province of Britis Ministry of Energ Report of Inspect (Issued pursuant to Section	h Golumbia Sy MANGALAESUGR or of Mines Act)	Inspection No.: File: CE OPERATIONS Permit No.: 20 Emp/Cont: Orders H&S: Stop Work:	20360 18080-02-02 0700468 G-7-75 0 / 0 0 RECL: 0 0
	Inspectio	n Report	and a second	
NAME OF MINE	MANTLE CREEK	LOCALITY	49.339, -122.750 COQUITLAM	
OWNER/OPERATOR	Lafarge Canada Inc. (Rayner Bracht Construction)	ADDRESS	Mantle Creek Coquitlam BC V	3E 3P6
MANAGER	Corey Mutter	AREAS INSPECTED	Pit & crusher	
	Persons (Contacted		
MANAGEMENT	Corey Mutter			24
OHS COMMITTEE				
WORKERS				
A copy has been forwarded to the Joint Occupational and Safety Committee and the union as applicable. The Mine manager shall complete the right hand column noting specific corrective actions taken by a specified date, and return a copy to the Inspector within 15 days of receiving the report. Further the manager shall post a copy to the bulletin board, to be replaced by a copy showing the manager's response. In this document, Code means Health, Safety and Reclamation Code for Mines in British Columbia.				
	INSPECTION ORDERS		MANAGI ACTION	ERS RESPONSE OF TAKEN
On May 17, 2011 a deficiencies;	site inspection was conducted and r	noticed the following		

- It was noticed that sections of the haul road leading to the upper pit were not provided with inadequate shoulder berm. The manager was ordered to immediately stop hauling and restore the berms specifically at a sharp curve with the drain pipe. The manager was reminded that a shoulder barrier at least ³/₄ the height of the largest tire on any vehicle hauling on the road shall be located and **maintained** along the edge of a haulage road where ever a drop off of more than three meter exist in compliance with **Section 6.9.1(2b)** of the code. This deficiency was also noticed during previous inspections.
- A tail pulley below the hopper was not effectively guarded. The manager shall ensure that all tail, drive, and tension pulleys of a conveyor shall be effectively guarded at their nip points and the guards

completed

Completed

estine! Gerry Barcelonia Inspector of Mines Signature - Inspector of Mines 6th Floor Victoria BC V8W 9N3 Address Signature - Manager

Date of Inspection:

Copies To

5/17/2011

E. Taje

Dated: 06/13/11 . 20 11

MANAGERS RESPONSE OF **INSPECTION ORDERS ACTION TAKEN** shall extend for a distance of at least 1 m from the nip point in compliance to Section 4.4.16(6) of the code. This shall be complied with immediately. 3. At the mine office, it was noticed that there is no shifter's logbook. The Sh. FH6055 will manager shall ensure that the shiftboss maintains a daily logbook to maintain his daily record the findings of his examination of all active workplaces at the logook and manager will review it. end of every shift in accordance with Section 6.4.2 of the code. This shall be complied with immediately. 4. A high pressure propane bottle was noticed standing unsecured near the repair shop. The manager shall ensure that all high pressure bottles are completed secured in accordance with Section 4.4.7(2b) of the code. This shall be complied with immediately. 5. The manager confirmed that brake test of all trucks have been Will be completed completed. The manager shall forward a copy to the inspector the brake testing results indicating the stopping distance for each truck based from July 31,2011. the minimum acceptable brake performance table in accordance to Section 4.9.19(1d) of the code. This shall be complied with in 15 days. 6. It was noticed that several haul trucks were fitted with tail gates. The Chief Inspector released a directive in pursuant to Section 4.9.10 of the completed code regarding safe procedures when tail gates are installed on haul trucks. The manager shall develop a written procedure for using tail gates that will focus at minimizing or eliminating potential hazards resulting from overloading, hauling of flow-able materials, hauling on steep grades, adverse road condition and dumping. The manager shall ensure that all workers involved are trained and understand the procedure. A copy of the procedure shall be available to an inspector when required.

Date of Inspection

5/17/2011

Initials

(Inspector)

Initials



Thursday, May 19, 2011

File: 18080-02-02 Mine No.: 0700468

Lafarge Canada Inc. (Rayner Bracht Const Mantle Creek Coquitlam BC, V3E 3P61850 Pipeline Rd

Dear Sir:

Re: Mine Inspection May 17, 2011 Property: MANTLE CREEK

Enclosed are two copies of my Inspection Report for the above noted property and date.

Please have this report posted in a conspicuous place on the property accessible to the workers in accordance with Section 30(1) of the Mines Act.

As noted on page one of the report, please fill in the appropriate areas responding to the Inspector's comments, sign and date the first page, initial the subsequent page(s) and return a copy with your comments to the writer.

Yours truly,

Smilin

Gerry Barcelonia Inspector of Mines

Enclosures

Ministry of Natural Resource Operations

6th Floor. 1810 Blanshard Street Victoria Telephone : (250) 952 0495 Facsimile : (250) 953 3878 6th Floor. 1810 Blanshard Street Victoria

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Province of British Columbia Ministry of Energy and Mines

Report of Inspector of Mines (Issued pursuant to Section 15 of the *Mines Act*)

Inspection No.:	20360
File:	18080-02-02
Mine No.:	0700468
Permit No.:	G-7-75
Emp/Cont:	0 / 0
Orders H&S:	0 RECL: 0
Stop Work:	0

	Inspection	n Report	
NAME OF MINE	MANTLE CREEK	LOCALITY	49.339, -122.750 COQUITLAM
OWNER/OPERATOR	Lafarge Canada Inc. (Rayner Bracht Construction)	ADDRESS	Mantle Creek Coquitlam BC V3E 3P6
MANAGER	Corey Mutter	AREAS INSPECTED	Pit & crusher

Persons Contacted

MANAGEMENT Corey Mutter

OHS COMMITTEE

WORKERS

A copy has been forwarded to the Joint Occupational and Safety Committee and the union as applicable. The Mine manager shall complete the right hand column noting specific corrective actions taken by a specified date, and return a copy to the Inspector within 15 days of receiving the report. Further the manager shall post a copy to the bulletin board, to be replaced by a copy showing the manager's response. In this document, Code means Health, Safety and Reclamation Code for Mines in British Columbia.

INSPECTION ORDERS		MANAGERS RESPONSE OF ACTION TAKEN
On May 17, 2011 a site inspection was conducted and deficiencies;	noticed the following	
 It was noticed that sections of the haul road leaver were not provided with inadequate shoulder be ordered to immediately stop hauling and restor at a sharp curve with the drain pipe. The mana shoulder barrier at least ³/₄ the height of the large hauling on the road shall be located and maint haulage road where ever a drop off of more that compliance with Section 6.9.1(2b) of the code also noticed during previous inspections. 	ading to the upper pit rm. The manager was e the berms specifically ger was reminded that a gest tire on any vehicle ained along the edge of a n three meter exist in This deficiency was	
2. A tail pulley below the hopper was not effective manager shall ensure that all tail, drive, and ter conveyor shall be effectively guarded at their manager sh	ely guarded. The sion pulleys of a ip points and the guards	
Gerry Barcelonia	Anuluu	
Inspector of Mines	Signature – Inspector of Mines	

6th Floor Victoria BC V8W 9N3

Address

Date of Inspection:5/17/2011Copies ToE. Taje

Dated:

Signature - Manager

, 20

MANAGERS RESPONSE OF ACTION TAKEN

shall extend for a distance of at least 1 m from the nip point in compliance to **Section 4.4.16(6)** of the code. This shall be complied with immediately.

- 3. At the mine office, it was noticed that there is no shifter's logbook. The manager shall ensure that the shiftboss maintains a daily logbook to record the findings of his examination of all active workplaces at the end of every shift in accordance with **Section 6.4.2** of the code. This shall be complied with immediately.
- 4. A high pressure propane bottle was noticed standing unsecured near the repair shop. The manager shall ensure that all high pressure bottles are secured in accordance with **Section 4.4.7(2b)** of the code. This shall be complied with immediately.
- 5. The manager confirmed that brake test of all trucks have been completed. The manager shall forward a copy to the inspector the brake testing results indicating the stopping distance for each truck based from the minimum acceptable brake performance table in accordance to **Section 4.9.19(1d)** of the code. This shall be complied with in 15 days.
- 6. It was noticed that several haul trucks were fitted with tail gates. The Chief Inspector released a directive in pursuant to **Section 4.9.10** of the code regarding safe procedures when tail gates are installed on haul trucks. The manager shall develop a written procedure for using tail gates that will focus at minimizing or eliminating potential hazards resulting from overloading, hauling of flow-able materials, hauling on steep grades, adverse road condition and dumping. The manager shall ensure that all workers involved are trained and understand the procedure. A copy of the procedure shall be available to an inspector when required.

Date of Inspection



Initials

(Inspector)

Initials



Monday, May 14, 2012

File: 18080-02-09 Mine No.: 0700468

Lafarge Canada Inc. (Rayner Bracht Const Mantle Creek Coquitlam BC, V3E 3P61850 Pipeline Rd

Dear Sir:

Re: Mine Inspection April 18, 2012 Property: MANTLE CREEK

Enclosed are two copies of my Inspection Report for the above noted property and date.

Please have this report posted in a conspicuous place on the property accessible to the workers in accordance with Section 30(1) of the Mines Act.

As noted on page one of the report, please fill in the appropriate areas responding to the Inspector's comments, sign and date the first page, initial the subsequent page(s) and return a copy with your comments to the writer.

Yours truly,

Michael Olsen Inspector of Mines

Enclosures

Ministry of Energy & Mines

PO Box 9395 Stn Prov Govt Victoria, BC V8W 9M9 Telephone: Facsimile: 6th Floor 1810 Blanshard Street Victoria

> Page 94 EGM-2014-00069

COLOMBIA	Report of Insp (Issued pursuant to Se	pector of Mines ction 15 of the <i>Mines Ac</i>	Emp/Cont: Orders H&S: :t) Stop Work:	0 1 0	/ 0 RECL:	0
	Inspecti	ion Report				
NAME OF MINE	MANTLE CREEK	LOCALITY	49.339, -122.750 Coouitlam			
OWNER/OPERATOR	Lafarge Canada Inc. (Rayner Bracht Construction)	ADDRESS	Mantle Creek Coquitlam BC V3E	E 3P6		
MANAGER	Corey Mutter	AREAS INSPECTED	Pit area and Fluton	Creek		
	Persons	Contacted				
MANAGEMENT	Corey Mutter					
OHS COMMITTEE						
WORKERS						
A copy has been forwarded to specific corrective actions take bulletin board, to be replaced	the Joint Occupational and Safety Committee and the ur n by a specified date, and return a copy to the Inspector by a copy showing the manager's response. In this docur	nion as applicable. The Mine man within 15 days of receiving the rep nent, Code means Health, Safety a	ager shall complete the rig port. Further the manager and Reclamation Code for P	ht hand c shall pos Mines in	olumn notin t a copy to tl British Colu	g 1e mbia.
IN	SPECTION ORDERS					
An inspection	was conducted on March 18, 2012.	MANAGERS RESPON	ISE OF ACTION TA	KEN		
I met with Corey Mutta need for compilation o comprehensive packag Minutes and historic in Diversion. The docume also took me on a tour	er on site. Our discussions regarded the f permit amendments into one e. We reviewed recent Safety Meeting aformation regarding the Fulton Creek ents on that project were complete. Corey of the site.	DO NOT MODIFY T	HIS TEXT			
During the inspection v down from the upper n concern was directed a runaway lane for this h determined that the cur	we discussed the haul road which comes nost active portion of the site. My round the potentially not suitable haul road. After further review, it has been rrent Runaway Lane is not adequate.					
Michael Olsen		Jan				
Inspector of Mines		Signature – Inspector of Min	nes			
PO Box 9395, Stn Prov C	Govt Victoria BC V8W 9M9					
Address		Signature – Manager				_
Date of Inspection: 4/1 Copies To	8/2012	Dated:			, 20	
			P E	age 95 GM-20	14-00069	

Province of British Columbia

Ministry of Energy and

Mines

Ministry of Energy and Mines

BRITISH COLUMBIA Inspection No.:

File:

Mine No.:

Permit No.:

23024

0700468

G-7-75

18080-02-09

MANAGERS RESPONSE OF ACTION TAKEN

SECTION :6.9.2 Vehicle Runaway Protection

The runaway lane provided is not adequate. It is not separate from other vehicular traffic, it is located after the switchback and is located where there is potential to meet other traffic. This is a contravention of 6.9.2 of the Health, Safety and Reclamation Code for Mines in British Columbia. The manager shall ensure that on roadways where the grade exceeds 5% runaway lanes or retardation barriers exist. The runaway protection shall provide protection suitable for the type and size of loaded haul truck. It shall be used exclusively for this purpose, designed by a professional and located before the switchback. Plans shall be forwarded to our office prior to construction. This shall be completed in 6 weeks.

*Note:

Until such time as construction has commenced, the pick-up truck access provided at the switch back may be used as temporary runaway protection provided that it is closed to all other traffic and it is modified to temporarily suit this purpose without endangering the safety other persons on site.

Date of Inspection

Initials

Initials



Wednesday, September 19, 2012

File: 18080-02-02 Mine No.: 0700468

Lafarge Canada Inc. (Rayner Bracht Const Mantle Creek Coquitlam BC, V3E 3P61850 Pipeline Rd

Dear Sir:

Re: Mine Inspection September 14, 2012 Property: MANTLE CREEK

Enclosed are two copies of my Inspection Report for the above noted property and date.

Please have this report posted in a conspicuous place on the property accessible to the workers in accordance with Section 30(1) of the Mines Act.

As noted on page one of the report, please fill in the appropriate areas responding to the Inspector's comments, sign and date the first page, initial the subsequent page(s) and return a copy with your comments to the writer.

Yours truly,

mulun

Gerry Barcelonia Inspector of Mines

Enclosures

Ministry of Energy & Mines

6th Floor. 1810 Blanshard Street Victoria Telephone : (250) 952 0495 Facsimile : (250) 953 3878 6th Floor. 1810 Blanshard Street Victoria

> Page 97 EGM-2014-00069



Low berm at main ramp to upper digging pit.

Same	
BRITISH	Ministry of
COLUMBIA	Energy and Mines

Province of British Columbia

Ministry of Energy and

Mines

Inspection No.:	24054
File:	18080-02-02
Mine No.:	0700468
Permit No.:	G-7-75
Emp/Cont:	0 / 0
Orders H&S:	0 RECL: 0
Stop Work:	0

Report of Inspector of Mines

(Issued pursuant to Section 15 of the Mines Act)

Inspection Report			
NAME OF MINE	MANTLE CREEK	LOCALITY	49.339, -122.750 COQUITLAM
OWNER/OPERATOR	Lafarge Canada Inc. (Rayner Bracht Construction)	ADDRESS	Mantle Creek Coquitlam BC V3E 3P6
MANAGER	Corey Mutter	AREAS INSPECTED	Pit

Persons Contacted

Corey Mutter-manager / Shane Whitbread-shiftboss MANAGEMENT

OHS COMMITTEE

WORKERS

A copy has been forwarded to the Joint Occupational and Safety Committee and the union as applicable. The Mine manager shall complete the right hand column noting specific corrective actions taken by a specified date, and return a copy to the Inspector within 15 days of receiving the report. Further the manager shall post a copy to the bulletin board, to be replaced by a copy showing the manager's response. In this document, Code means Health, Safety and Reclamation Code for Mines in British Columbia.

MANAGERS RESPONSE OF ACTION TAKEN

INSPECTION ORDERS

A mine inspection was conducted on September 14, 2012 and noticed that several sections of the main haul road did not have adequate shoulder barrier as per code requirement. During this inspection the main haul road was ordered closed until all shoulder berms are brought into compliance. The same contravention was also noticed on the following inspection reports; Inspection # 17065, 18336, 20360.

1. Section 6.9.1(2b) Mine Haul Road Design

"The manager shall ensure that haulage roads are designed, constructed and maintained to provide (b) a shoulder barrier (i) at least 3/4 of the height of the largest tire on any vehicle hauling on the road, (ii) of a construction or a specification that is in general conformance to accepted engineering practice, (iii) located and maintained along the edge of the haulage road wherever a drop-off greater

milin Gerry Barcelonia Inspector of Mines Signature - Inspector of Mines 6th Floor Victoria BC V8W 9N3 Address Signature - Manager Date of Inspection: 9/14/2012 Dated: , 20

> Page 99 EGM-2014-00069

Copies To

MANAGERS RESPONSE OF ACTION TAKEN

than 3 m exists,"

It was noticed that the main ramp towards the upper pit digging area has a drop off of more than 3 meters on both sides, did not have adequate shoulder barrier. This section of the haul road shall not be used until it is provided with adequate shoulder berms on both sides having a height of at least ³/₄ the height of the largest tire on any vehicle used on this road. The manager is reminded that the berms shall be maintained while this section of the road is used as a haul road.



2. Section 6.9.1(2b) Mine Haul Road Design

"The manager shall ensure that haulage roads are designed, constructed and maintained to provide (b) a shoulder barrier

(i) at least 3/4 of the height of the largest tire on any vehicle hauling on the road,

(ii) of a construction or a specification that is in general conformance to accepted engineering practice, (iii) located and maintained along the edge of the haulage road wherever a drop-off greater

than 3 m exists, "

Several sections of the main haul road stretching from the rock dump corner up to the second switch back that leads to the upper pit digging area, did not have adequate shoulder barrier. This section of the haul road shall not be used until it is provided with adequate shoulder berms on both sides having a height of at least ³/₄ the height of the largest tire on any vehicle used on this road. The manager is reminded that the berms shall be maintained while this section of the road is used as a haul road. In pursuant to Section 6.9.1(1), the manager shall submit within 15 days a plan that shows an "as built" design and method of construction for haulage roads at the mine.

Date of Inspection

Initials

(Inspector)

Initials

MANAGERS RESPONSE OF ACTION TAKEN

3. Section 6.20.3 Dumping Over Bank

"No person shall drive or operate a haulage vehicle, in such a manner as to dump material from the vehicle over a bank that is more than 3 m high, or dump within 3 m of the dump berm crest when the bank is more than 3 m high, except as described in section 6.10.1(4), unless a dump person is directing vehicles to the dumping position and a dump berm is in place." It was noticed that haul trucks were dumping over a bank at a soil dump that is more than 3m high. The manager shall not allow dumping within 3m from the edge of the bank at any stockpile dump that is over 3 m high unless as prescribed on this section of the code.

4. Section 6.20.3 Dumping Over Bank

"No person shall drive or operate a haulage vehicle, in such a manner as to dump material from the vehicle over a bank that is more than 3 m high, or dump within 3 m of the dump berm crest when the bank is more than 3 m high, except as described in section 6.10.1(4), unless a dump person is directing vehicles to the dumping position and a dump berm is in place." The red dump and the rock dump did not have adequate dump berms. The manager shall not allow dumping at these stockpiles until adequate dump berms are in place.

Date of Inspection



Initials

(Inspector)

Initials



Tuesday, June 25, 2013

File: 18080-02-02 Mine No.: 0700468

Lafarge Canada Inc. (Rayner Bracht Const Mantle Creek Coquitlam BC, V3E 3P61850 Pipeline Rd

Dear Sir:

Re: Mine Inspection June 21, 2013 Property: MANTLE CREEK

Enclosed are two copies of my Inspection Report for the above noted property and date.

Please have this report posted in a conspicuous place on the property accessible to the workers in accordance with Section 30(1) of the Mines Act.

As noted on page one of the report, please fill in the appropriate areas responding to the Inspector's comments, sign and date the first page, initial the subsequent page(s) and return a copy with your comments to the writer.

Yours truly,

mulun

Gerry Barcelonia Inspector of Mines

Enclosures

Ministry of Energy & Mines

6th Floor. 1810 Blanshard Street Victoria Telephone : (250) 952 0495 Facsimile : (250) 953 3878 6th Floor. 1810 Blanshard Street Victoria

> Page 102 EGM-2014-00069

BRITISH	Ministry of
COLUMBIA	Energy and Mines

Province of British Columbia

Ministry of Energy and Mines

26416 **Inspection No.:** File: 18080-02-02 Mine No.: 0700468 Permit No.: G-7-75 **Emp/Cont:** 0 / 0 Orders H&S: 0 **RECL:** 0 Stop Work: 0

Report of Inspector of Mines

(Issued pursuant to Section 15 of the Mines Act)

Inspection Report			
NAME OF MINE	MANTLE CREEK	LOCALITY	49.339, -122.750 COQUITLAM
OWNER/OPERATOR	Lafarge Canada Inc. (Rayner Bracht Construction)	ADDRESS	Mantle Creek Coquitlam BC V3E 3P6
MANAGER	Kelly Worth	AREAS INSPECTED	Pit & crusher

Persons Contacted

MANAGEMENT Kelly Worth

OHS COMMITTEE

WORKERS

A copy has been forwarded to the Joint Occupational and Safety Committee and the union as applicable. The Mine manager shall complete the right hand column noting specific corrective actions taken by a specified date, and return a copy to the Inspector within 15 days of receiving the report. Further the manager shall post a copy to the bulletin board, to be replaced by a copy showing the manager's response. In this document, Code means Health, Safety and Reclamation Code for Mines in British Columbia.

INSPECTION ORDERS	MANAGERS RESPONSE OF ACTION TAKEN
A mine inspection was conducted on June 21, 2013 and noticed the following deficiencies;	
 Surge feed conveyor – The tail pulley of this conveyor was not effectively guarded. This section of the conveyor shall not be operated until an effective guard has been installed in accordance to section 4.4.16(6) of the code. 	
 Traffic plan – A section of the haul road to the loading pit was less than twice the width of the road. The manager shall ensure that if widening the road is impractical, a traffic control procedure shall be developed to ensure safe travel of the haul trucks in compliance with section 6.9.1(2a) of the code. This shall be complied with immediately. 	
3. Run away lane – The upper section of the haul road was more than 5% grade. The manager shall establish at a strategic location runaway lanes or retardation	

Gerry Barcelonia		- Endew		
Inspector of Mines		Signature – Inspector of Mines		
6th Floor Victoria B	C V8W 9N3			
Address		Signature – Manager		
Date of Inspection:	6/21/2013	Dated:	, 20	
Copies To				

INSPECTION ORDERS MANAGERS RESPONSE OF ACTION TAKEN barriers as per section 6.9.2 of the code. 4. Loader back up alarm- at the stockpile area the loader back up alarm was not functional during the visit. The loader shall be provided with a back up alarm as per section 4.9.1 of the code. 5. Switch gear box – at the MCC the switch box shall be provided with a cover as per section 5.1.1 of the code. This shall be complied with immediately. 6. **Dust collector** – the grinder at the shop shall not be operated until it is provided with suitable dust collector as per section 4.4.3(8) of the code. 7. **Grinder mount** – the work rest of the grinder was more than 3 mm. This grinder shall be adjusted in accordance with section 4.4.3(5) of the code. This shall be complied with immediately. 8. Securing HP bottle - A high pressure bottle at the shop was standing not secured. The manager shall ensure that all HP bottles when not in used shall be secured as per section 4.4.7(2a) of the code.

Date of Inspection

Initials

(Inspector)

Initials



Thursday, April 3, 2014

File: 18080-02-02 Mine No.: 0700468

Jeevan Wadhawa Lafarge Canada Inc. (Rayner Bracht Const Mantle Creek Coquitlam BC, V3E 3P61850 Pipeline Rd

Dear Sir:

Re: Mine Inspection March 25, 2014 Property: MANTLE CREEK

Enclosed are two copies of my Inspection Report for the above noted property and date.

Please have this report posted in a conspicuous place on the property accessible to the workers in accordance with Section 30(1) of the Mines Act.

As noted on page one of the report, please fill in the appropriate areas responding to the Inspector's comments, sign and date the first page, initial the subsequent page(s) and return a copy with your comments to the writer.

Yours truly,

mulun

Gerry Barcelonia Inspector of Mines

Enclosures

Ministry of Energy & Mines

6th Floor. 1810 Blanshard Street Victoria Telephone : (250) 952 0495 Facsimile : (250) 953 3878 6th Floor. 1810 Blanshard Street Victoria

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BRITISH COLUMBIA En	inistry of ergy and Mines (I	Province of Minist an Report of 1 ssued pursuant t	of British Co ry of En d Mines Inspector of o Section 15 of	lumbia ergy f Mines the <i>Mines Act</i>)	Inspection No.: File: Mine No.: Permit No.: Emp/Cont: Orders H&S: Stop Work:	28906 18080 07004 G-7-7 8 0 0	;)-02-02 168 '5 / 0 RECL:	0
		Inspe	ection Report					
NAME OF MINE	MANTLE CREEK		LOCALITY	Y 49 C0	9.339, -122.750 Oquitlam			
OWNER/OPERATOR	Lafarge Canada Inc. (Construction)	Rayner Bracht	ADDRESS	M Co	antle Creek oquitlam BC V3E 3	P6		
MANAGER	Kelly Worth		AREAS IN	SPECTED Pi	t & crusher			
		Perso	ns Contacted					
MANAGEMENT	Jeevan Wadhawa							
OHS COMMITTEE								
WORKERS								
A copy has been forwarded to specific corrective actions take bulletin board, to be replaced	the Joint Occupational and S en by a specified date, and ret by a copy showing the manag	afety Committee and the urn a copy to the Inspec er's response. In this do	e union as applicable. tor within 15 days of cument, Code means	. The Mine manager s receiving the report. I Health, Safety and Re	hall complete the right h Further the manager sha eclamation Code for Mir	and colu all post a as in Bri	mn noting copy to the tish Columb	oia.
	INSPECTION ORI	DERS		MANAGERS RE	ESPONSE OF ACT	'ION T	AKEN	
A mine inspection company of Jim D & E Officer and Je was not active duri been engaged in gr	was conducted on unkley-Mines Insp eevan Wadhawa-N ing the visit and fo	March 25, 201 bector, Doug Ha ew Manager. T r quite some tin d processing	4 with the ayes $-C$ The mine me has not total of 8					

was not active during the visit and for quite some time has not been engaged in gravel extraction and processing. A total of 8 workers report in three shifts to monitor and manage water run-off, and for security purposes. The water clarifier is operated and maintained to ensure that all runoff undergoes water treatment before it is released to the clear water pond. The upper north pit has been sloped and seeded for final reclamation, however thawing and recent high precipitation may have caused the development of several cracks parallel to the toe line that has the potential to develop into a major failure. Monitoring program has been in place with the consultant to monitor and rectify the condition. The following

Gerry Barcelonia		Emiliu		
Inspector of Mines		Signature – Inspector of Mines		
6th Floor Victoria B	C V8W 9N3			
Address		Signature – Manager		
Date of Inspection:	3/25/2014	Dated:	, 20	
Copies To	E. Taje			

MANAGERS RESPONSE OF ACTION TAKEN

were also noticed during the inspection:

- Safe work procedure The manager shall develop a written safe work procedure for working at or below a slope that indicated signs of failure to ensure safety of the worker and equipment. The procedure shall be instructed to the worker involved and a copy shall be made available to an inspector upon request. This shall be complied with immediately as per section 1.9.1 of the code.
- Notification of new mine manager The inspector was not notified with regards to the appointment of a new manager. Immediately after each appointment, the inspector shall be notified in writing of the name of the manger as required under section 21(b) of the Mine's Act. This shall be complied with immediately.
- 3. Trees near the rim At the upper fill area, trees were noticed at the edge of the road cut. The area below the trees shall be barricaded to prevent inadvertent access until the trees and other debris near the rim of the cut are cleared to at least 2 meters away in compliance to section 6.23.1 of the code.
- 4. Securing high pressure cylinder A large propane tank was not secured while stored at the shop. The manager shall ensure that every compressed gas cylinder containing fuel gas when not in use shall be secured adequately by chain or other means to prevent it from being knocked over as required under section 4.4.7(2b) of the code.
- 5. Damaged slings 3 lifting slings at the shop showing damage, some cuts and fraying were ordered removed from service as per section 4.21.4 of the code.
- Emergency lights The clarifier master switch compartment shall be provided with a separate and independent emergency source of illumination as required under section 2.8.2 of the code. This shall be complied with immediately.

Date of Inspection

3/25/2014

/

Initials

(Inspector)

Initials

(Manager)

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Coouitlam

April 18, 2013 Our File: 11-5225-01/000/2013-1 Doc #: 1425901.v3

Mr. David Morel Assistant Deputy Minister Mines and Mineral Resources Division Ministry of Energy, Mines and Natural Gas PO Box 9320 Stn Prov Govt Victoria BC V8W 9N3

Dear Mr. Morel:

RE: Drainage Issues in the Mantle and Fulawka Creek Watersheds

The City is very concerned about the drainage alterations that are occurring within the Mantle and Fulawka Creek watersheds on Crown land.

Mantle Creek is now non-existent through the aggregate mining sites and drainage from the upper Mantle Creek watershed has been re-directed to a storm sewer running through the Lafarge site (see attached sketch). Due to the limited capacity of their storm sewer, a weir structure has been constructed to divert flow to Fulawka Creek during heavy rainfall. The diverted flows are causing erosion and flooding along Fulawka Creek, and increasing the risk of landslides.

Construction of the BC Hydro transmission lines has also changed drainage paths and reduced forest cover which contributes to the problems.

The recent heavy rainfall in March, 2013 caused debris flows in Fulawka Creek and blocked the culvert crossing of Pipeline Road. This resulted in the flooding of Pipeline Road and downstream properties (pictures attached). We understand that flows from the upper Mantle Creek watershed have been temporarily diverted to Fulawka Creek to alleviate flooding on Lafarge's property as a result of a localized landslide which affected their internal drainage system.

To mitigate the flooding, the City is planning to upsize the Pipeline Road culvert this year. However, the capacity of Fulawka Creek downstream of Pipeline Road is inadequate to handle the diverted flows from Upper Mantle Creek.

The culvert upsizing also does not resolve the increased erosion and risk of landslides in the Fulawka Creek watershed. Unless mitigated, debris flows will continue to impact

the Pipeline Road culvert and cause flooding. There have been numerous small landslides within the Fulawka Creek watershed. The most recent in 2005 caused turbid water to run into Coquitlam River for months. We are concerned that a large landslide has the potential to damage Pipeline Road, critical regional water supply mains and residential properties along Coquitlam River.

The drainage issues originating from Crown land are a serious risk to public safety and a threat to public infrastructure and constitute a breach of the City's Stream & Drainage Protection Bylaw. Of further concern is the potential environmental impact to the Coquitlam River and surrounding watershed that is occurring as a result of uncontrolled run off from the gravel mining operations.

We have met with the aggregate miners to discuss the drainage issues. However, all stakeholders will need to work together to resolve the problems.

We invite the Province, as land owner, to the next meeting of the Coquitlam River Aggregate Committee to discuss and explore solutions. The committee consists of Council representatives, aggregate miners, regulatory agencies, stream keepers and other stakeholders. Kindly advise us of the names who will be attending so we may send appropriate invitations when the meeting date is set.

If you have any questions, contact Dana Soong, Manager Utility Programs at 604-927-6207 or Steffanie Warriner, Manager Environmental Services, 604-927-3536.

Yours truly William J. Susak, P.Er

General Manager Engineering and Public Works

DKS/ds

Encl.

c. - Jim Standen, Ministry of Environment

Keith Anderson, Manager, Crown Lands and Resources, Ministry of Forest Lands & Natural Resource Operations

Michelle Dann, Director, Advisory Services, Ministry of Community, Sport & Cultural Development Director of Public Works

Manager Environmental Services

Manager Utility Programs

File #: 11-5225-01/000/2013-1 Doc #: 1425901.v3



Pictures taken on March 13, 2013 at 1875 Pipeline Road, Coquitlam, BC.

File #: 11-5225-01/000/2013-1 Doc #: 1425901.v3


BRITISH COLUMBI	j Mir IA Ene	istry of rgy and Mines	Province Ministr Report of (Issued pursuant	y of Br y of Mi f Insp t to Sect	itish Columbia Energy and nes ector of Mines tion 15 of the <i>Mines Act</i>)	Inspection No.: File: Mine No.: Permit No.: Emp/Cont: Orders H&S: Stop Work:	2641 1808 0700 G-7- 0 0 0	6 0-02-02 468 75 / 0 RECL;	0
1000			I	nspectio	n Report	(consense)			
NAME OF MI	NE	MANTLE CREE	ζ.		LOCALITY	49.339, -122.750 COQUITLAM			
OWNER/OPE	RATOR	Lafarge Canada Ir Construction)	Inc. (Rayner Bracht ADDRESS		Mantle Creek Coquitlam BC V3E	3P6			
MANAGER		Kelly Worth			AREAS INSPECTED	Pit & crusher			
			P	ersons C	Contacted				
MANAGEME	NT	Kelly Worth							
OHS COMMIT	TTEE								
WORKERS									
A copy has been fo specific corrective bulletin board, to b	rwarded to t actions taker be replaced b	he Joint Occupational and by a specified date, and y a copy showing the ma	nd Safety Committee ar return a copy to the In nager's response. In th	nd the unio Ispector wi nis docume	on as applicable. The Mine manag ithin 15 days of receiving the repor ent, Code means Health, Safety and	er shall complete the right rt. Further the manager s I Reclamation Code for M	t hand e hall pos lines in	olumn noting t a copy to th British Colun	e nbia.
	IN	SPECTION ORDE	RS		MANAGERS RESPONS	E OF ACTION TAK	KEN		
A mine inspect the following	ction was deficienc	conducted on June ies;	e 21, 2013 and no	ticed	Plastic guardi	ng removed	ano	l repla	ived
 Surge feed conveyor - The tail pulley of this conveyor was not effectively guarded. This section of the conveyor shall not be operated until an effective guard has been installed in accordance to section 4.4.16(6) of the code. 									
2. Traffic plan - A section of the haul road to the loading pit was less than twice the width of the road. The manager shall ensure that if widening the road is impractical, a traffic control procedure shall be developed to ensure safe travel of the haul trucks in compliance with section 6.9.1(2a) of the code. This shall be complied with immediately. Road widened to ensure the trucks are able to safely pass each offer the safe travel of the shall be developed to ensure safe travel of the code. This shall be complied with immediately.				¢					
 Run away lane – The upper section of the haul road was more than 5% grade. The manager shall establish at a strategic location runaway lanes or retardation 			Run away la section of road	way with be	d a ba	long fi	lat		
Gerry Barcelonia					- K andun				

W

Inspector of Mines

6th Floor Victoria BC V8W 9N3

Address

Date of Inspection: 6/21/2013

Copies To

Signature - Inspector of Mines

July 3

Signature – Manager

Dated:

. 20 13

Page 112 EGM-2014-00069

Report of Inspector of Mines Page 2 of 2				
	INSPECTION ORDERS	MANAGERS RESPONSE OF ACTION TAKEN		
	barriers as per section 6.9.2 of the code.			
4.	Loader back up alarm - at the stockpile area the loader back up alarm was not functional during the visit. The loader shall be provided with a back up alarm as per section 4.9.1 of the code.	Back alarm toos been repaired and tested		
5.	Switch gear box – at the MCC the switch box shall be provided with a cover as per section 5.1.1 of the code. This shall be complied with immediately.	Cover has been installed		
6.	Dust collector – the grinder at the shop shall not be operated until it is provided with suitable dust collector as per section $4.4.3(8)$ of the code.	Hoses installed to collect ausi		
7.	Grinder mount the work rest of the grinder was more than 3 mm. This grinder shall be adjusted in accordance with section 4.4.3(5) of the code. This shall be complied with immediately.	Mount rest distance checked with new grindler, and was withing 3mm (wheel)		
8.	Securing HP bottle - A high pressure bottle at the shop was standing not secured. The manager shall ensure that all HP bottles when not in used shall be secured as per section 4.4.7(2a) of the code.	Bottle moved to designated extinder storage and secured		

Initials

J.

(Inspector)

	BRITISH COLUMBIA En	inistry of ergy and Mines (I	Province of E Ministry of M Report of Ins	British Columbia f Energy and ines pector of Mines extion 15 of the <i>Mines Act</i>)	Inspection No.: File: Mine No.: Permit No.: Emp/Cont: Orders H&S: Stop Work:	23024 18080-02-09 0700468 G-7-75 0 / 0 1 RECL: 0 0
سندر ا			Inspect	ion Report	<u> </u>	
	NAME OF MINE	MANTLE CREEK		LOCALITY	49.339, -122.750	
	OWNER/OPERATOR	Lafarge Canada Inc Construction)	. (Rayner Bracht	ADDRESS	Mantle Creek Coquitlam BC V3E	3P6
	MANAGER	Corey Mutter		AREAS INSPECTED	Pit area and Fluton C	reek
10			Persons	Contacted		
ileo tanto vi	MANAGEMENT	Corey Mutter				
	OHS COMMITTEE	1.000 Addal (s 🕊 – Kanadad) (1.000 Addal ad				
	WORKERS					
-	A copy has been forwarded to specific corrective actions tak bulletin board, to be replaced	o the Joint Occupational and (en by a specified date, and d by a copy showing the mar	d Safety Committee and the u return a copy to the Inspector tager's response. In this docu	nion as applicable. The Mine manage within 15 days of receiving the repo ument, Code means Health, Safety an	ger shall complete the right rt. Further the manager sl id Reclamation Code for M	hand column noting hall post a copy to the lines in British Columbia.
	1	NSPECTION ORDER	0			Serlama 18. 17:
	An inspection	n was conducted on M	arch 18, 2012.	MANAGERS RESPONS	SE OF ACTION TAK	EN
	I met with Corey Mutter on site. Our discussions regarded the need for compilation of permit amendments into one comprehensive package. We reviewed recent Safety Meeting Minutes and historic information regarding the Fulton Creek Diversion. The documents on that project were complete. Corey also took me on a tour of the site.			DO NOT MODIFY TH	HS TEXT	
	During the inspection down from the upper concern was directed runaway lane for this determined that the co	we discussed the ha most active portion of around the potentiall haul road. After furth urrent Runaway Lane	ul road which comes of the site. My y not suitable her review, it has beer is not adequate.	We have s this area mining t this area.	and m the peak	wed to North o
	Michael Olsen			Jan		
-	Inspector of Mines			Signature - Inspector of Mine	es	
	PO Box 9395, Stn Prov	Govt Victoria BC V8V	V 9M9	Ling MAT	$\overline{\mathcal{O}}$	
	Address Date of Inspection: 4, Copies To	/18/2011 JUN	三 [VED] 2 & 2012	Signature – Manager Dated: <u>Maij</u>	14	,20 12
		Ministry of E	nergy and Mines		Page 1 EGM-2	14 014-00069

Inspector of Mines Page 2 of 2

INSPECTION ORDERS

SECTION :6.9.2 Vehicle Runaway Protection

The runaway lane provided is not adequate. It is not separate from other vehicular traffic, it is located after the switchback and is located where there is potential to meet other traffic. This is a contravention of 6.9.2 of the Health, Safety and Reclamation Code for Mines in British Columbia. The manager shall ensure that on roadways where the grade exceeds 5% runaway lanes or retardation barriers exist. The runaway protection shall provide protection suitable for the type and size of loaded haul truck. It shall be used exclusively for this purpose, designed by a professional and located before the switchback. Plans shall be forwarded to our office prior to construction. This shall be completed in 6 weeks.

"ivote:

Until such time as construction has commenced, the pick-up truck access provided at the switch back may be used as temporary runaway protection provided that it is closed to all other traffic and it is modified to temporarily suit this purpose without endangering the safety other persons on site.

MANAGERS RESPONSE OF ACTION TAKEN

We will not have any traffic coming from the original mining area. We will review possible options for a revised runaway lane or retardation barnier.

Date of Inspection



Initials

(Inspector)

mit

Initials

(Manager)

BRITISH COLUMBIA	Ministry of Energy and Mines	Province of Ministry N Report of Ir (Issued pursuant to	British Columbia of Energy and Aines Inspector of Mines Section 15 of the <i>Mines Act</i>)	Inspection No.: 2 File: 6 Mine No.: 6 Permit No.: 6 Emp/Cont: 6 Orders H&S: 6 Stop Work: 6	24054 18080-02-02 0700468 G-7-75) / 0) RECL: 0)
Inspection Report					
NAME OF MINE	MANTLE CREEI	K	LOCALITY	49.339, -122.750 COQUITLAM	
OWNER/OPERATO	R Lafarge Canada In Construction)	nc. (Rayner Bracht	ADDRESS	Mantle Creek Coquitlam BC V3E 3F	26
MANAGER	Corey Mutter		AREAS INSPECTED	Pit	
199 <u>1 - Jan Barn</u> a Maria Managaran M	<u>-</u> //	Perso	ns Contacted		
MANAGEMENT	Corey Mutter-mar	nager / Shane Whitbread	l-shiftboss		
OHS COMMITTEE					
WORKERS					

A copy has been forwarded to the Joint Occupational and Safety Committee and the union as applicable. The Mine manager shall complete the right hand column noting specific corrective actions taken by a specified date, and return a copy to the Inspector within 15 days of receiving the report. Further the manager shall post a copy to the bulletin board, to be replaced by a copy showing the manager's response. In this document, Code means Health, Safety and Reclamation Code for Mines in British Columbia.

HAVE

MEET

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OF

INSPECTION ORDERS

A mine inspection was conducted on September 14, 2012 and noticed that several sections of the main haul road did not have adequate shoulder barrier as per code requirement. During this inspection the main haul road was ordered closed until all shoulder berms are brought into compliance. The same contravention was also noticed on the following inspection reports; Inspection # 17065, 18336, 20360.

1. Section 6.9.1(2b) Mine Haul Road Design

"The manager shall ensure that haulage roads are designed, constructed and maintained to provide (b) a shoulder barrier (i) at least 3/4 of the height of the largest tire on any vehicle hauling on the road, (ii) of a construction or a specification that is in general conformance to accepted engineering practice, (iii) located and maintained along the edge of the haulage road wherever a drop-off greater

Gerry Barcelonia

Inspector of Mines

6th Floor Victoria BC V8W 9N3

Address

Date of Inspection: 9/14/2012

Copies To

duw

Signature - Inspector of Mines

Signature - Manager

10/03/12 Dated:

MANAGERS RESPONSE OF ACTION TAKEN

BEEN RAISED

CODE

MAIN HAUL ROAD

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12 . 20

OCTOBER 03

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RE QUIREMENTS

INSPECTION ORDERS

MANAGERS RESPONSE OF ACTION TAKEN

than 3 m exists,"

It was noticed that the main ramp towards the upper pit digging area has a drop off of more than 3 meters on both sides, did not have adequate shoulder barrier. This section of the haul road shall not be used until it is provided with adequate shoulder berms on both sides having a height of at least 34 the height of the largest tire on any vehicle used on this road. The manager is reminded that the berms shall be maintained while this section of the road is used as a haul road.



Section 6.9.1(2b) Mine Haul Road Design 2.

"The manager shall ensure that haulage roads are designed, constructed and maintained to provide (b) a shoulder barrier

(i) at least 3/4 of the height of the largest tire on any vehicle hauling on the road,

(ii) of a construction or a specification that is in general conformance to accepted engineering practice, (iii) located and maintained along the edge of the haulage road wherever a drop-off greater

than 3 m exists."

Several sections of the main haul road stretching from the rock dump corner up to the second switch back that leads to the upper pit digging area, did not have adequate shoulder barrier. This section of the haul road shall not be used until it is provided with adequate shoulder berms on both sides having a height of at least ³/₄ the height of the largest tire on any vehicle used on this road. The manager is reminded that the berms shall be maintained while this section of the road is used as a haul road. In pursuant to Section 6.9.1(1), the manager shall submit within 15 days a plan that shows an "as built" design and method of construction for haulage roads at the mine.

our engineered read design was e-mailled to the Inspector on oglap/12

All shoulder bernes have been raised to meet requirements.

Date of Inspection

9/14/2012

Initials

(Inspector)

Initials

(Manager)

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Report of Inspector of Mines Page 3 of 3

INSPECTION ORDERS

3. Section 6.20.3 Dumping Over Bank

"No person shall drive or operate a haulage vehicle, in such a manner as to dump material from the vehicle over a bank that is more than 3 m high, or dump within 3 m of the dump berm crest when the bank is more than 3 m high, except as described in section 6.10.1(4), unless a dump person is directing vehicles to the dumping position and a dump berm is in place." It was noticed that haul trucks were dumping over a bank at a soil dump that is more than 3m high. The manager shall not allow dumping within 3m from the edge of the bank at any stockpile dump that is over 3 m high unless as prescribed on this section of the code.

4. Section 6.20.3 Dumping Over Bank

"No person shall drive or operate a haulage vehicle, in such a manner as to dump material from the vehicle over a bank that is more than 3 m high, or dump within 3 m of the dump berm crest when the bank is more than 3 m high, except as described in section 6.10.1(4), unless a dump person is directing vehicles to the dumping position and a dump berm is in place." The red dump and the rock dump did not have adequate dump berms. The manager shall not allow dumping at these stockpiles until adequate dump berms are in place. MANAGERS RESPONSE OF ACTION TAKEN

The haul truck drivers have been instructed not to dump over the edge fif higher than 3m.

Adequate dump berns have been put in place.

Date of Inspection

9/14/2012

Initials

(Inspector)

(Manager)

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0700468



May 15, 2013

Mr. William J. Susak, P.Eng. General Manager, Engineering and Public Works City of Coquitlam 3000 Guilford Way Coquitlam, BC V3B 7N2

Dear Mr. Susak:

Thank you for your April 18, 2013 letter regarding ongoing drainage issues in the Mantle and Fulawka Creek watersheds. The landslide resulting in this last incident did not occur on any of the mines sites but is a continuation of an ongoing problem relating to the topography and increased rainfall.

Coquitlam Sand and Gravel, (Lafarge) has engaged Golder Associates to evaluate the situation, implement immediate corrective measures, and put together a report addressing this problem as a long term potential concern. As of this date our Senior Inspector, Mr. Taye has been in communication with the Regional Hydrologist, Department of Fisheries and Oceans, Golder Associates and Lafarge, and is waiting for the final report from Lafarge. Mr. Taje believes that this incident would warrant a specific meeting with the impacted or interested agencies to formulate a plan for addressing similar issues should this type of incident occur in the future.

We concur the protection of the Coquitlam River is paramount in any decision, and the Ministry of Energy, Mines, and Natural Gas is committed to working towards a suitable long term solution to this concern.

Should you have any questions please contact Mr. Taje, the Senior Inspector for the Coast Area at 250-952-0732 or by email Eddy. Taje@gov.bc.ca.

Yours truly.

David Morel Assistant Deputy Minister

Pc: Ed Taje Senior Inspector of Mines Coast Area

Ministry of Energy, Mines and Natural Gas Mining and Minerals Division

Mailing Address: PO Box 9320, Stn Prov Govt Victoria, BC V8W 9N3 Ph: (250) 952-0470 Facsimile: (250) 952-0491 Location: 6th Floor 1810 Blanshard Street Victoria

> Page 119 EGM-2014-00069



Coquitlam Sand & Gravel 1850 Pipeline Road Coquitlam, B.C. V3E 3P6 Office: (604) 945-8946 Fax: (604) 945-8982

AGGREGATES, CONCRETE & ASPHALT

June 19, 2014

s.22 from October 21, 2011 – November 1, 2011 the assistant manager, **Phillip Wallace**, will be the acting manager at Coquitlam Sand and Gravel.

Thank you, Corey Mutter Manager Coquitlam sand and gravel

From: Sent: To: Cc: Subject: Attachments:	Chris Carr s.22 Friday, May 30, 2014 12:04 PM 'Jeevan Wadhawa' Warnock, George MEM:EX; Narynski, Heather M MEM:EX; Taje, Eddy MEM:EX FW: Ministry of Energy & Mines inspection at Coquitlam Sand & Gravel 1114220016-506-L-Rev0-5000-Mantle Creek Erosion Control_16Apr_13.pdf; 1114220016-513-R-RevA_Lafarge CSG 2013 Prog_Reclam_Activities_09DEC_2013pdf; DAM INVENTORY.docx; Coquitlam S&G Ministry of Mines Response 05-31-2014.pdf; 1114220016-504-L-Rev1-Lafarge Coq Sand and Gravel_2 APR_13.pdf
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Jeevan,

Thanks for sending the information. I will let you know if the Ministry has any questions or comments.

Regards,

Chris Carr, P.Eng. Senior Geotechnical Engineer On behalf of the BC Ministry of Energy and Mines Tel: 250 544-0763 Email: s.22

From: Jeevan Wadhawa [mailto:jeevan.wadhawa@lafarge.com]
Sent: May-30-14 10:32 AM
To: Chris Carr
Subject: Re: Ministry of Energy & Mines inspection at Coquitlam Sand & Gravel

Hello Chris Please see the attached response to the inspector directions:

On Wed, May 7, 2014 at 3:09 PM, Chris Carr < s.22 > wrote:

Hi Jeevan,

I have attached my report for the geotechnical inspection completed at the Lafarge Pit on April 28, 2014. Please provide a written response to the inspection orders (shown in italics) within 15 days. A word document is included if needed for your response.

Regards,

Chris Carr, P.Eng.

Senior Geotechnical Engineer

On behalf of the BC Ministry of Energy and Mines

Tel: 250 544-0763

Email: s.22

Jeevan Wadhawa, BBA | Aggregates | Plant Supervisor - Coquitlam Sand & Gravel / Depot Manager | Lafarge

Phone (604) 945-8946 |
 Mobile (604) 968-7001 |
 Fax (604) 945-8982

Email jeevan.wadhawa@lafarge.com

From:	Hoffman, AI EMNG:EX
Sent:	Friday, April 19, 2013 6:53 PM
To:	Brody, Margo X EMNG:EX
Cc:	Seguin, Joe EMNG:EX; Taje, Eddy EMNG:EX; Olsen, Michael EMNG:EX; Barcelonia, Gerry EMNG:EX
Subject:	Fwd: Drainage Issues in the Mantle and Fulawka Creek Watersheds
Attachments:	Drainagelssues001.pdf; ATT00001.htm

Please cliff this document and assign to eddy.

Please print off a copy of the letter for me.

Sl

Sent from my iPhone

Begin forwarded message:

From: "Morel, David P EMNG:EX" <<u>David.Morel@gov.bc.ca</u>> Date: 19 April, 2013 8:02:20 PM EDT To: "Hoffman, Al EMNG:EX" <<u>Al.Hoffman@gov.bc.ca</u>> Cc: "Musgrove, Kate EMNG:EX" <<u>Kate.Musgrove@gov.bc.ca</u>> Subject: FW: Drainage Issues in the Mantle and Fulawka Creek Watersheds

Al

For response and appropriate action

David

-----Original Message-----From: Laube, Maria [<u>mailto:mlaube@coquitlam.ca</u>] Sent: Friday, April 19, 2013 2:35 PM To: Morel, David P EMNG:EX Subject: Drainage Issues in the Mantle and Fulawka Creek Watersheds

Please find attached a copy of the above letter for your information. The hardcopy will be sent via mail.

Thank you,

Maria Laube Office Supervisor City of Coquitlam Engineering & Public Works 3000 Guildford Way Coquitlam BC V3B 7N2 Office: 604.927.3504 Fax: 604.927.3505 mlaube@coquitlam.ca

Coouitlam

April 18, 2013 Our File: 11-5225-01/000/2013-1 Doc #: 1425901.v3

Mr. David Morel Assistant Deputy Minister Mines and Mineral Resources Division Ministry of Energy, Mines and Natural Gas PO Box 9320 Stn Prov Govt Victoria BC V8W 9N3

Dear Mr. Morel:

RE: Drainage Issues in the Mantle and Fulawka Creek Watersheds

The City is very concerned about the drainage alterations that are occurring within the Mantle and Fulawka Creek watersheds on Crown land.

Mantle Creek is now non-existent through the aggregate mining sites and drainage from the upper Mantle Creek watershed has been re-directed to a storm sewer running through the Lafarge site (see attached sketch). Due to the limited capacity of their storm sewer, a weir structure has been constructed to divert flow to Fulawka Creek during heavy rainfall. The diverted flows are causing erosion and flooding along Fulawka Creek, and increasing the risk of landslides.

Construction of the BC Hydro transmission lines has also changed drainage paths and reduced forest cover which contributes to the problems.

The recent heavy rainfall in March, 2013 caused debris flows in Fulawka Creek and blocked the culvert crossing of Pipeline Road. This resulted in the flooding of Pipeline Road and downstream properties (pictures attached). We understand that flows from the upper Mantle Creek watershed have been temporarily diverted to Fulawka Creek to alleviate flooding on Lafarge's property as a result of a localized landslide which affected their internal drainage system.

To mitigate the flooding, the City is planning to upsize the Pipeline Road culvert this year. However, the capacity of Fulawka Creek downstream of Pipeline Road is inadequate to handle the diverted flows from Upper Mantle Creek.

The culvert upsizing also does not resolve the increased erosion and risk of landslides in the Fulawka Creek watershed. Unless mitigated, debris flows will continue to impact

the Pipeline Road culvert and cause flooding. There have been numerous small landslides within the Fulawka Creek watershed. The most recent in 2005 caused turbid water to run into Coquitlam River for months. We are concerned that a large landslide has the potential to damage Pipeline Road, critical regional water supply mains and residential properties along Coquitlam River.

The drainage issues originating from Crown land are a serious risk to public safety and a threat to public infrastructure and constitute a breach of the City's Stream & Drainage Protection Bylaw. Of further concern is the potential environmental impact to the Coquitlam River and surrounding watershed that is occurring as a result of uncontrolled run off from the gravel mining operations.

We have met with the aggregate miners to discuss the drainage issues. However, all stakeholders will need to work together to resolve the problems.

We invite the Province, as land owner, to the next meeting of the Coquitlam River Aggregate Committee to discuss and explore solutions. The committee consists of Council representatives, aggregate miners, regulatory agencies, stream keepers and other stakeholders. Kindly advise us of the names who will be attending so we may send appropriate invitations when the meeting date is set.

If you have any questions, contact Dana Soong, Manager Utility Programs at 604-927-6207 or Steffanie Warriner, Manager Environmental Services, 604-927-3536.

Yours truly William J. Susak, P.Er General Manager Engineering and Public Works

DKS/ds

Encl.

c. - Jim Standen, Ministry of Environment

Keith Anderson, Manager, Crown Lands and Resources, Ministry of Forest Lands & Natural Resource Operations

Michelle Dann, Director, Advisory Services, Ministry of Community, Sport & Cultural Development Director of Public Works

Manager Environmental Services

Manager Utility Programs

File #: 11-5225-01/000/2013-1 Doc #: 1425901.v3



Pictures taken on March 13, 2013 at 1875 Pipeline Road, Coquitlam, BC.

File #: 11-5225-01/000/2013-1 Doc #: 1425901.v3



From:Narynski, Heather M MEM:EXSent:Wednesday, April 23, 2014 5:22 PMTo:Chris CarrSubject:Pipeline Road Reclamation Reports

Hi Chris,

I have had Jen (Reclamation Inspector) look through all their digital reclamation files. There is no record of any reclamation reports for any year for any of the Pipeline operations. She also searched in MMS as she indicated she has sometimes seen them filed there. There are also no hard copy reports for these operations in the back file room (as far as I can see). I will check with regional staff tomorrow as well, however, it seems if these documents exist, they have not been submitted to MEM.

Heather

Heather Narynski, P.Eng Sr. Geotechnical Inspector Ministry of Energy and Mines 1810 Blanshard St., Victoria, BC V8W 9N3 Wk: 250-387-0883 Cell: 250-893-3396

From:	Dunkley, Jim R MEM:EX
Sent:	Tuesday, April 22, 2014 1:22 PM
То:	Pope, Rue MEM:EX
Subject:	FW: Mine Manager at Coquitlam Sand & Gravel
Follow Up Flag:	Follow up
Flag Status:	Completed

For file 0700468

From: Kevin Tokarek [mailto:kevin.tokarek@lafarge.com]
Sent: Tuesday, April 22, 2014 12:29 PM
To: Barcelonia, Gerry MEM:EX; Dunkley, Jim R MEM:EX
Cc: Jeevan Wadhawa
Subject: Mine Manager at Coquitlam Sand & Gravel

Gerry / Jim,

s.22

We have now appointed Jeevan Wadhawa as mine manager for our Coquitlam Sand & Gravel site.

Should you have any further questions regarding this please let me know.

Thanks.

 Kevin Tokarek, CMA | Operations Manager | GVA Aggregates | Lafarge Western Canada

 Phone (604) 455-6205 | Mobile (604) 312-8947 | Revin. Tokarek@lafarge.com

 Kevin.Tokarek@lafarge.com

 Web www.lafargenorthamerica.com

Pages 131 through 133 redacted for the following reasons: Not Responsive