



COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY
MINERALS PROGRAM INSPECTION REPORT
PHONE: (303) 866-3567

The Division of Reclamation, Mining and Safety has conducted an inspection of the mining operation noted below. This report documents observations concerning compliance with the terms of the permit and applicable rules and regulations of the Mined Land Reclamation Board.

MINE NAME: Ft. Lupton Sand and Gravel Mine	MINE/PROSPECTING ID#: M-1999-120	MINERAL: Borrow material	COUNTY: Weld
INSPECTION TYPE: Monitoring	INSPECTOR(S): Tom Kaldenbach	INSP. DATE: November 20, 2013	INSP. TIME: 12:00
OPERATOR: L. G. Everist, Incorporated	OPERATOR REPRESENTATIVE: None	TYPE OF OPERATION: 112c - Construction Regular Operation	

REASON FOR INSPECTION: Citizen Complaint	BOND CALCULATION TYPE: None	BOND AMOUNT: \$2,002,400.00
DATE OF COMPLAINT: NA	POST INSP. CONTACTS: Citizen	JOINT INSP. AGENCY: None
WEATHER: Clear	INSPECTOR'S SIGNATURE: <i>Tom Kaldenbach</i>	SIGNATURE DATE: March 14, 2014

GENERAL INSPECTION TOPICS

This list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each. No problems or possible violations were noted during the inspection. The mine operation was found to be in full compliance with Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials and/or for Hard Rock, Metal and Designated Mining Operations. Any person engaged in any mining operation shall notify the office of any failure or imminent failure, as soon as reasonably practicable after such person has knowledge of such condition or of any impoundment, embankment, or slope that poses a reasonable potential for danger to any persons or property or to the environment; or any environmental protection facility designed to contain or control chemicals or waste which are acid or toxic-forming, as identified in the permit.

(AR) RECORDS----- <u>N</u>	(FN) FINANCIAL WARRANTY----- <u>N</u>	(RD) ROADS----- <u>N</u>
(HB) HYDROLOGIC BALANCE----- <u>Y</u>	(BG) BACKFILL & GRADING----- <u>N</u>	(EX) EXPLOSIVES----- <u>N</u>
(PW) PROCESSING WASTE/TAILING---- <u>N</u>	(SF) PROCESSING FACILITIES----- <u>N</u>	(TS) TOPSOIL----- <u>N</u>
(MP) GENL MINE PLAN COMPLIANCE- <u>N</u>	(FW) FISH & WILDLIFE----- <u>N</u>	(RV) REVEGETATION---- <u>N</u>
(SM) SIGNS AND MARKERS----- <u>N</u>	(SP) STORM WATER MGT PLAN---- <u>N</u>	(SB) COMPLETE INSP---- <u>N</u>
(ES) OVERBURDEN/DEV. WASTE----- <u>N</u>	(SC) EROSION/SEDIMENTATION--- <u>N</u>	(RS) RECL PLAN/COMP-- <u>N</u>
(AT) ACID OR TOXIC MATERIALS----- <u>N</u>	(OD) OFF-SITE DAMAGE----- <u>Y</u>	(ST) STIPULATIONS----- <u>N</u>

Y = Inspected and found in compliance / N = Not inspected / NA = Not applicable to this operation / PB = Problem cited / PV = Possible violation cited

OBSERVATIONS

This inspection was conducted by Tom Kaldenbach and Tony Waldron of DRMS. The inspection was conducted in response to a complaint that DRMS received from Ross Bachofer on October 25, 2013. The complaint explains that the Bachofer property has flooded several times since a slurry wall was constructed at the Fort Lupton Sand and Gravel Mine in 2004. The flooding since that time is reported to have occurred when flows in the South Platte River were between 6,400 cfs and 10,000 cfs (as measured at Fort Lupton). Prior to 2004, flooding of the Bachofer property is reported to have not occurred during flows that were greater than 10,000 cfs. A Flood Insurance Study published in 1978 identified historic flood levels for the South Platte at Fort Lupton as 10,000 cfs for a 10-year flood, and 29,000 cfs for a 100-year flood. The complaint includes an evaluation of possible causes of the flooding, prepared for Mr. Bachofer by Ganser Lujan & Associates, dated October 5, 2013.

Mr. Bachofer was present during the inspection. The inspection consisted of visually examining Mr. Bachofer's property and discussing aspects of the complaint. The ground on the property was wet. There was evidence of recent high river flows (branches and leaves lodged in trees, etc.) that probably occurred during the mid-September 2013 region-wide flooding. During the inspection, the river was flowing at 422 cfs at the Fort Lupton USGS gauge (06721000), located approximately one-half mile downstream from the Bachofer property. The water surface in the river was more than 6 feet below what appeared would be the bank-full stage at the Bachofer property (crest of east river bank shown in attached photos).

After the field inspection, DRMS conducted an in-office review of agency files that focused on possible causes of the increased flooding of the Bachofer property. Documents in the files indicate previous investigations have focused on the following possible causes of the increased flooding:

1. Removal of a berm on the Bachofer property and the property's proximity to the river (DRMS inspection report, dated 6/4/09),
2. Migration of the river toward the house (Memorandum from Weld County Engineer to Weld County Engineer, dated 3/4/11),
3. Overburden stockpiles in the floodplain (letters from Ross Bachofer to various parties on various dates),
4. Mounding of alluvial groundwater on the upgradient sides of the slurry walls at the Fort Lupton Sand and Gravel Mine (letters from Ross Bachofer to various parties on various dates; letter from Ganser Lujan & Associates to Ross Bachofer, dated 10/4/13),
5. Aggradation of the river channel and floodplain, i. e. elevation increase of the river bottom and banks by sediment deposition (letter from Ganser Lujan & Associates to Ross Bachofer, dated 10/4/13), and
6. Reduced width of the floodplain for river flows of less than 10,000 cfs caused by installation of the slurry wall in the Golden Reservoir area of the Fort Lupton Sand and Gravel operation, located directly across (west of) the river from the Bachofer property (letter from Ganser Lujan & Associates to Ross Bachofer, dated 10/4/13). DRMS jurisdiction in the Golden Reservoir area was terminated when that area received final bond release on 6/30/09 (this was Acreage Release number 2 for the mine).

Pertinent elevations found during the file review and field inspection are shown below.

Item	Elevation	Data Source
Lower floor of Bachofer house	4,875 ft	Surveyed elevation reported by Mr. Bachofer.
Bankfull level (east bank) of South Platte River near Bachofer house	4,873 ft	Visually estimated during inspection, relative to lower floor of Bachofer house.
Crest elevation of slurry wall on east side of Golden Reservoir, directly across (west of) the river from the Bachofer property	4,877 ft	As-built drawing prepared by King Surveyors, Inc. and provided to Mr. Bachofer by City of Aurora with cover letter dated 11/9/09.
Approximate average elevation of topography in the Golden Reservoir area prior to mining	4,872 ft	Estimated from Exhibit C-2, Pre-Mining Map in permit application of Fort Lupton Sand and Gravel Mine (permit M-1999-120).

Based on the field inspection and file review, it seems reasonable that possible causes numbered 1, 2, 5, and 6, above may contribute to the increased flooding, but it is not possible to identify their relative contributions with a significant degree of certainty. Installation of a protective wall or berm would possibly reduce flood impacts on the Bachofer property, but a proper engineering investigation and design would be needed before implementing such a mitigation measure.

Number 3 (overburden stockpiles in the floodplain) does not appear to be a current significant cause of flooding because no stockpiles are located in the Golden Reservoir area, although it should be verified that the elevations of stockpiles in currently active mining areas do not exceed an elevation that would contribute to flooding on the Bachofer property.

Number 4 (mounding of alluvial ground water next to the slurry wall) does not appear to be a significant cause. Mounding would shorten the length of time for the alluvium to reach full saturation during periods of high river flow because the unsaturated zone in the alluvium prior to high-flow is thinner than it would be without mounding. Upon full saturation of the alluvium during a high-flow period, however, any further mounding of alluvial groundwater would discharge from the top of the unconfined alluvial aquifer into the channel of the South Platte River before reaching the Bachofer property. The river channel is located between the mine and the Bachofer property, and the channel is at a lower elevation than the Bachofer property.

PHOTOGRAPHS



Photo 1 – Downstream view of South Platte River from east river bank on Mr. Bachofer's property. Bankfull elevation is assumed to be crest (top) of this bank.



Photo 2 – Treed area between South Platte River and Mr. Bachofer's house (visible in distance past trees).



Photo 3 – Upstream view of South Platte River from river bank on Mr. Bachofer's property.

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