




**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.

<b>MINE NAME:</b> E 8 <sup>th</sup> Street Operation	<b>MINE/PROSPECTING ID#:</b> M-2000-082	<b>MINERAL:</b> Sand and Gravel	<b>COUNTY:</b> Weld
<b>INSPECTION TYPE:</b> Monitoring	<b>INSPECTOR(S):</b> Peter S. Hays	<b>INSP. DATE:</b> March 11, 2016	<b>INSP. TIME:</b> 12:00
<b>OPERATOR:</b> Superior Oilfield Services Co., LTD	<b>OPERATOR REPRESENTATIVE:</b> Jack Miller	<b>TYPE OF OPERATION:</b> 112c - Construction Regular Operation	

<b>REASON FOR INSPECTION:</b> Citizen Complaint	<b>BOND CALCULATION TYPE:</b> None	<b>BOND AMOUNT:</b> \$270,000.00
<b>DATE OF COMPLAINT:</b> March 7, 2016	<b>POST INSP. CONTACTS:</b> None	<b>JOINT INSP. AGENCY:</b> None
<b>WEATHER:</b> Clear	<b>INSPECTOR'S SIGNATURE:</b> 	<b>SIGNATURE DATE:</b> March 16, 2016

**The following inspection topics were identified as having Problems or Possible Violations. OPERATORS SHOULD READ THE FOLLOWING PAGES CAREFULLY IN ORDER TO ASSURE COMPLIANCE WITH THE TERMS OF THE PERMIT AND APPLICABLE RULES AND REGULATIONS. If a Possible Violation is indicated, you will be notified under separate cover as to when the Mined Land Reclamation Board will consider possible enforcement action.**

**INSPECTION TOPIC:** Hydrologic Balance

**PROBLEM/POSSIBLE VIOLATION:** Problem: The Operator has not collected the required groundwater monitoring well data since 2013 in accordance with the approved monitoring and mitigation plan and one (1) monitoring well could not be located and one (1) monitoring well was damaged during the inspection.

**CORRECTIVE ACTIONS:** The Operator must reinitiate the approved groundwater monitoring plan, provide groundwater measurements for all current wells and install a replacement monitoring well for the damaged MW-1 well and repair MW-2 well by the corrective action date.

**CORRECTIVE ACTION DUE DATE:** 4/15/16

**INSPECTION TOPIC:** Hydrologic Balance

**PROBLEM/POSSIBLE VIOLATION:** Problem: The dewatering activity at the E 8th Street Operation has caused disturbances to the prevailing hydrologic balance and is affecting the groundwater well located at 417 East 8th Street, Greeley, CO 80631 owned by Mr. Tyrrell. This is a problem related to Rule 3.1.6 of the Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials and CRS 34-32.5-116(4)(h) of the Colorado Land Reclamation Act for the Extraction of Construction Materials.

**CORRECTIVE ACTIONS:** The Operator must implement the approved groundwater mitigation plan for the site. The Operator must submit a report to the Division within thirty (30) days. The report must include the specific mitigation measures taken by the Operator to alleviate the effect of the dewatering at the E 8th Street Operation on the Tyrrell well. Failure to comply may result in the problem escalating to a possible violation and an enforcement hearing being scheduled before the Mined Land Reclamation Board.

**CORRECTIVE ACTION DUE DATE:** 4/15/16

## **OBSERVATIONS**

The E 8th Street Operation was inspected by Peter Hays with the Division of Reclamation, Mining and Safety (Division/DRMS) as part of a complaint investigation for an impacted groundwater well near the mining operation. The citizen complaint (CT-01) was received from Mr. Jack Tyrrell by the Division on March 7, 2016. The complaint letter identified the Loloff Mine as the cause of the groundwater impacts, however the E 8<sup>th</sup> Street Operation is closer to the well therefore, the site was included in the well complaint investigation by the Division. The Loloff Mine is located approximately 900 feet north of the Tyrrell well and approximately 0.25 miles north of the E 8th site. The Tyrrell well is located northwest of the E 8th site, approximately 430 feet from the northwest corner. A map of the Tyrrell well, Loloff Mine, and the E 8th Ave site locations is attached for reference.

The well is located within the Office of the State Engineers (SEO) required notification area for the E 8th site, therefore the E 8th site was included in the complaint investigation by the Division. Mr. Jack Miller with Superior Oilfield Services Co., LTD (Superior) was present during the inspection. A copy of the complaint letter was provided to Mr. Miller during the inspection. A hard copy of the complaint letter will be mailed to the Operator for the Operator's record.

### **Tyrrell Well**

The Tyrrell property is located at 417 East 8th Street, Greeley, CO 80631. The complaint letter states well water for the house and shop on the property were lost on February 28, 2016. The Division met with Mr. Tyrrell on his property prior to the inspection of the E 8th site. The Tyrrell well is registered with the Office of the State Engineer under permit # 134824-A. The well was constructed in 1983 to a total depth of thirty five (35) feet below grade. Shale bedrock was encountered at twenty nine and a half (29.5) feet below grade. The well is approved for domestic use at a rate of 15 GPM.

The upper well casing and wellhead were observed during the inspection. The groundwater and pump elevations could not be determined during the inspection, due to the lack of an access port in the well. The well location was GPS surveyed using a Trimble Juno 3B by the Division.

Mr. Tyrrell stated Quality Well and Pump (Quality) inspected the well on February 28, 2016. Mr. Tyrrell stated Quality determined the well pumps were operational and the reason for the lack of water was insufficient groundwater in the well. The Division requested Mr. Tyrrell contact Quality for information on the depth to water, well depth and depth to the pump measured during the Quality inspection, if available. The information has not been received by the Division as of the mailing date of this inspection report. The Tyrrell well pumps to a cistern before water is pumped to the house and shop building. Mr. Tyrrell did not know the capacity of the cistern or if the cistern could be filled with delivered water as a possible short term mitigation measure for the well.

### **E 8th Street Operation**

The E 8th Street Operation was active during the inspection. Mining Phase 2 was being dewatered and mined. The Operator stated Phase 2 has been dewatered for 1.5 to 2 years. The Tyrrell well is located approximately 430 feet from Phase 2 of the E 8th Street Operation. The mining phase is dewatered by a dewatering ditch around the perimeter of the excavation and a dewatering pump located in the southwest corner of the phase. The mining phase was estimated by the Division to be seventy (70) percent reclaimed. The north, west and

south slopes have been graded and the upper banks of the future lake have been topsoiled above the anticipated water elevation. The access ramp on the east slope of the Phase was being removed by mining excavation. The Operator estimated the ramp will be removed in the next 2 months and reclamation will be complete in the Phase by the end of June 2016. The depth of the pit was surveyed according to the Operator. The pit floor is fifty (50) below the top of slope. The Operator stated the water seep elevation in the pit slopes is approximately forty five (45) feet below the top of slope. The phase will be allowed to fill with groundwater following completion of reclamation. The groundwater infiltration should restore the drawdown effects on the Tyrrell well.

#### *Monitoring Wells*

The groundwater monitoring and mitigation plan for the site was revised under technical revision no. 1 (TR-01). The technical revision was approved by the Division on November 24, 2010. The approved monitoring plan states: two (2) monitoring wells, MW-1 and MW-2, will be monitored for Phase 1, three (3) wells, Derr MW-1, Derr MW-2 and Derr MW-3, along the southern boundary of the Derr Pit will be monitored for Phase 2 and two (2) additional wells will be installed between the Phase 3 mining area and the northern and southern Duggan wells. The Duggan monitoring wells are to be installed twelve (12) months prior to dewatering activity in Phase 3. All monitoring wells are required to be monitored on a monthly basis.

The last groundwater well monitoring data received by the Division was submitted by the previous Operator in the 2013 annual report. The Succession of Operator application was issued by the Division on March 20, 2013, transferring all mining and reclamation responsibility to Superior Oilfield Services Co., LTD. The Operator stated during the inspection they were unaware of the groundwater monitoring requirement at the site and have not collected the required monitoring well data.

The two approved Phase 1 monitoring wells were searched for during the inspection. Monitoring well No. 1 (MW-1) was located in the northwest corner of the original permit boundary. The western portion of the site was purchased by Leprino Foods Company in 2013. The area was released from the site in 2013, under AR-01. The Leprino Foods Company, constructed a lined pond in the northwest corner of the original permit boundary (Phase 4). It appears MW-1 was destroyed during the construction of the pond. Monitoring well No. 2 (MW-2) was located during the inspection. The upper well casing was damaged, causing the PVC pipe to pinch closed at ground level. A groundwater elevation could not be determined during the inspection. The well appeared to be repairable, if the upper well casing is excavated and a new riser pipe and protective well casing were installed.

As cited as a problem, the Operator must reinitiate the approved groundwater monitoring plan, provide groundwater measurements for all current wells and install a replacement monitoring well for the damaged MW-1 well and repair MW-2 well by the corrective action date.

#### *Hill Petroleum well*

Hill Petroleum installed a replacement monitoring well, Permit # 299316, on the E 8th site on June 19, 2015. The well is located between the Phase 1 monitoring wells, MW-1 and MW-2. The SEO records indicate the well was drilled to thirty (30) feet below grade. Groundwater was not encountered during the well installation. The original Hill monitoring well was observed and measured during the inspection. The well measured eighteen (18) feet below grade and no water was encountered in the well.

### *Mitigation Plan*

The approved groundwater mitigation plan for the site is based on a well owners' well performance as a mitigation trigger. If a well owner is experiencing problems with their well, the Operator will evaluate the cause based upon groundwater data obtained through the monitoring program, the location of the well relative to mining activity, weather and land use conditions. Any groundwater issues encountered in the area between the E 8th Street Operation and the Loloff and Derr Mines will be evaluated based upon the influence of mining and reclamation activities at all three sites.

The Operator will review the available data and vicinity information and submit a report to the Division within thirty (30) days. The report will include discussions with the well owner and a review of data from the monitoring wells and the vicinity information to evaluate whether changes may be due to seasonal variation, climate, mining, surrounding land uses or other factors. If the mining or reclamation activities are determined to be a significant contributing factor to groundwater changes requiring mitigation, the Operator will coordinate with the affected well owner to determine the appropriate mitigation options.

The following is a list of mitigation measures that may be implemented to mitigate the effect of the mining activity on the surrounding well:

- Modify the existing well to operate under lower groundwater conditions. This could include re-drilling the existing well to deeper depths or lowering the pump. All work would be done at the expense of the Operator with the exception of replacing equipment that was non-functional prior to mining.
- If the existing well cannot be repaired, the Operator will drill a new well within 200 feet of the existing well for the owner to replace the damaged well. The new well will produce water of the same quantity and quality to support the historic use.
- Provide an alternative source of water to support the historic well water use.

### Conclusions

The Division believes sufficient evidence exists to support the Tyrell complaint that the current dewatering activity at the E 8th Street Operation is affecting the groundwater well located at 417 East 8th Street, Greeley, CO 80631. This is a problem related to Rule 3.1.6 of the Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials and CRS 34-32.5-116(4)(h) of the Colorado Land Reclamation Act for the Extraction of Construction Materials.

Based on the GPS data and calculations from Google Earth Pro, the Division estimates the Tyrell well is located 430 feet (130 meters) from the northwest corner of Phase 2 of the E 8th Street Operation. The pit radius of Phase 2 was estimated at 400 feet (122.5 meters). Using the USGS Analytical and Numerical Simulation of Steady-State Hydrologic Effects of Mining Aggregate in Hypothetical Sand-and-Gravel and Fractured Crystalline-Rock Aquifers, Report 02-4267, the Division calculated a drawdown of 10.5 feet (3.2 meters) for the Tyrell well due to the dewatering of Phase 2 at the E 8th Street Operation.

Overall, based on the observations from this inspection, the lack of groundwater monitoring data from the Operator and the calculated drawdown, the Division believes the E 8<sup>th</sup> Street Operation has caused disturbances to the prevailing hydrologic balance of the surrounding area and to the quantity of water in the groundwater system.



As cited as a problem, the Operator must implement the approved groundwater mitigation plan for the site. The Operator must submit a report to the Division within thirty (30) days. The report must include the specific mitigation measures taken by the Operator to alleviate the effect of the dewatering at the E 8th Street Operation on the Tyrrell well.

The Loloff Mine, M-1985-112, operated by Loloff Construction, Inc. was also inspected and a problem was cited for groundwater impacts to the Tyrrell well associated with this complaint. The cumulative effect of dewatering at both sites has caused disturbances to the prevailing hydrologic balance. The Division recommends the Operator coordinate with Loloff Construction, Inc. to provide mitigation measures.

Photographs taken during the inspection and the inspection map are attached.

**PHOTOGRAPHS**



Tyrrell wellhead and casing



Looking NW from scale house at Phase 2





Looking north from scale house at Phase 2



Hill Petroleum monitoring wells





Looking SE from NW corner of Phase 2



Looking east from NW corner of Phase 2





Superior MW-2



Looking south from MW-2 at ramp excavation

### **GENERAL INSPECTION TOPICS**

The following list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each

(AR) RECORDS----- <u>N</u>	(FN) FINANCIAL WARRANTY----- <u>N</u>	(RD) ROADS----- <u>N</u>
(HB) HYDROLOGIC BALANCE----- <b>PB</b>	(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>	(SW) STORM WATER MGT PLAN---- <u>N</u>	(CI) 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>N</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

#### **Inspection Contact Address**

Mr. Jack Miller  
Superior Oilfield Services Co., LTD  
1011 11<sup>th</sup> Ave  
Greeley, CO 80631

Enclosure – Inspection Map

Cc: Wally Erickson, DRMS  
Jack Tyrrell, Well Owner  
Kelly Hodge, Loloff Construction, Inc.






Certified Mail No. 7014 0150 0000 9138 8847  
Return Receipt Requested



# Tyrrell Well Complaint Map

March 11, 2016 Inspection

## Legend

-  Hill Petroleum Monitoring well
-  Loloff Mine
-  Superior MW-2
-  Superior Oilfield - E 8th Street Operation
-  Tyrrell Well

