



EarthFax

EarthFax
Engineering Inc.
Engineers/Scientists
7324 So. Union Park Ave.
Suite 100
Midvale, Utah 84047
Telephone 801-561-1555

November 25, 1991

Mr. Mark P. Page
Price Area Engineer
Department of Natural Resources
Division of Water Rights
P.O. Box 718
Price, Utah 84501

RECEIVED

NOV 26 1991

DIVISION OF
OIL GAS & MINING

SUBJECT: Drilling Permit - Crandall Canyon Mine in-mine groundwater monitoring wells. Drilling/completion modifications. Monitor Well Application 91-93-02MW.

Dear Mr. Page:

As per our November 25, 1991 telecommunication, enclosed are updated drilling and completion modifications to application 91-93-02MW. These modifications include:

- 1/ a reduction in the diameter of the drill hole from 6.5 to 3 inches. This modification is needed due to physical mine size constraints that do not enable mobilization of a larger drill rig underground.
- 2/ completion with a gravel pack and bentonite seal in cases 1 and 2, rather than an open-hole completion. This change is made in order to facilitate acquisition of more accurate hydrologic data.

Please review the updated drilling and completion scenarios presented below.

CASE 1: ARTESIAN CONDITIONS - POTENTIOMETRIC SURFACE ABOVE MINE FLOOR.

Drill a 3.0 in. hole approximately 25 feet deep.

1.5 inch I.D. schedule-40 PVC pipe will be emplaced to the bottom of the hole. The bottom 10 feet of pipe will be a 10-slot screen, the remaining pipe will be blank casing.

10-20 mesh sand will be placed around the slotted screen to 11 feet above hole bottom. 70 mesh sand will be placed from 11 to 13 feet above hole bottom. Bentonite will be placed above the 70 mesh sand to 3 feet from the mine floor.

A screw-on PVC cap equipped with a pressure gauge and a pressure-release valve will be fastened to the top of the pipe.

Cement will be poured on top of the bentonite to the surface. A flush-mounted metal protective cap will be cemented into the

mine floor.

CASE 2: POTENTIOMETRIC SURFACE LIES LESS THAN 100 FEET BELOW THE MINE FLOOR.

Drill a 3 in. hole 20 feet below the potentiometric surface.

1.5 inch I.D. schedule-40 PVC pipe extending from the mine floor to the bottom of hole will be placed in the drill hole. The PVC pipe will be slotted (10-slot) from T.D. to approximately 5 ft. above the potentiometric surface.

10-20 mesh sand will be placed around the slotted screen, extending 1 foot above the top of the slotted section. Two feet of 70 mesh sand will be placed above the 10-20 sand. Bentonite will be placed above the 70 mesh sand to 3 feet from the mine floor.

A screw-on PVC cap equipped with a pressure gauge and a pressure-release valve will be fastened to the top of the pipe.

Cement will be poured on top of the bentonite and extend to the mine floor. A flush-mounted metal protective cap will be cemented into the mine floor.

CASE 3: POTENTIOMETRIC SURFACE LIES GREATER THAN 100 FEET BELOW THE MINE FLOOR.

Drill a 3 in. hole 100 feet below the mine floor.

Install 1.5 in. I.D. schedule-40 PVC pipe from mine floor to T.D. The bottom 10 feet of the pipe will be slotted (10-slot).

A metal flush-mounted protective cap will be cemented into the mine floor to protect the well.

Drilling of these wells is planned for December, 1991. All drilling will be conducted in compliance with MSHA regulations.

If any further information is required please feel free contact me at EarthFax's Salt Lake City office (phone: 561-1555)

Sincerely,

Brent K. Bovee
Brent K. Bovee
Geologist

cc: Rick Summers, Division of Oil, Gas and Mining

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DIVISION OF
OIL GAS & MINING



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July 24, 1991

Mr. Daron Haddock
Division of Oil, Gas, and Mining
State of Utah Natural Resources
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

SUBJECT: Crandall Canyon Mine - permit correction, and rescheduling drilling
of in-mine groundwater monitoring wells.

Dear Daron:

Enclosed please find 14 revised copies of page 14 of the Crandall Canyon Mining and Reclamation Plan. These changes to Chapter 14, State Leases ML-21568 and ML-21569, were made in response to a 7/23/91 telephone communication between Jay Marshall (Genwal) and Sharon Falvey (DOG M). Sharon pointed out that section 14.5.1.5 incorrectly states that mine discharge is routed via the sediment pond prior to discharge into Crandall Creek. Mine discharge water is not routed through the sediment pond.

Genwal has committed to drilling two additional in-mine groundwater monitoring wells in Lease ML-21569 to more accurately delineate the potentiometric surface and effects of mine dewatering on the hydrologic system. Well locations and a schedule for drilling (August) were agreed upon during conversations with Genwal and DOGM (David Darby). However, due to a slower mining rate than anticipated, one of these locations is yet to be mined. Consequently, Genwal has rescheduled drilling of these wells for the fourth quarter of 1991. The affects of mine dewatering on the hydrologic system will be reevaluated and Chapter 14 updated.

If you have any questions or comments please don't hesitate to call myself (561-1555), or Jay Marshall (687-9813).

Sincerely,

Brent Bovee

Brent K. Bovee
Geologist

cc: David Darby, DOGM
Jay Marshall, Genwal



EarthFax

EarthFax
Engineering Inc.
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7324 So. Union Park Ave.
Suite 100
Midvale, Utah 84047
Telephone 801-561-1555

July 11, 1991

David Darby
Geologist
Division of Oil, Gas, and Mining
State of Utah Natural Resources
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear David:

Please find enclosed a copy of the letter that Genwal Coal Company is submitting to the Division of Water Rights to obtain a drilling permit. This permit is to drill two in-mine groundwater monitoring wells.

Drilling is planned for the latter half of August, 1991. I will contact you and let you know what the exact drilling dates are when a drilling contractor has been chosen and scheduled.

Please review the drilling permit application letter and contact me (561-1555) if you have any comments or questions.

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NOV 26 1991

DIVISION OF
OIL GAS & MINING

Sincerely,

Brent K. Bovee

Brent K. Bovee
Geologist

July 11, 1991



EarthFax

Mr. John Solum
Department of Natural Resources
Division of Water Rights
1636 West North Temple
Salt Lake City, Utah 84116-3156

EarthFax
Engineering Inc.
Engineers/Scientists
7324 So. Union Park Ave.
Suite 100
Midvale, Utah 84047
Telephone 801-561-1555

SUBJECT: Drilling Permit - Crandall Canyon Mine in-mine groundwater monitoring wells.

Dear Mr. Solum:

In compliance with Utah Division of Oil, Gas and Mining regulations, Genwal Coal Company is planning to drill two in-mine groundwater monitoring wells in their Crandall Canyon Mine, Emery County, Utah. The aquifer to be monitored is the regional Upper Cretaceous Blackhawk Star Point aquifer. Only water level measurements are to be taken from these two wells. Both monitor wells (MW-4 & MW-5) are located in T15S-R6E-Sec36. MW-4 will be drilled approximately 3000 ft. FWL and 500 ft. FSL; MW-5 will be drilled approximately 100 ft. FEL and 2000 ft. FNL. These well locations are subject to minor change as dictated by mine conditions.

The drilling and completion procedures to be used in each well are dependent upon where the potentiometric surface is encountered during drilling. Three scenarios are herein presented.

CASE 1: ARTESIAN CONDITIONS - POTENTIOMETRIC SURFACE ABOVE MINE FLOOR.

Drill a 6.5 in. hole approximately 25 feet deep.

Four inch I.D. schedule-40 PVC pipe will be emplaced in the hole with the pipe hung above the hole bottom.

A basket will be attached several feet above the bottom of the PVC pipe.

Cement will be pumped down the annulus and lie from the basket to the surface.

A screw-on PVC cap equipped with a pressure gauge and a pressure-release valve will be fastened to the top of the pipe.

A flush-mounted metal protective cap will be cemented into the mine floor.

CASE 2: POTENTIOMETRIC SURFACE LIES LESS THAN 100 FEET BELOW THE MINE FLOOR.

Drill a 6.5 in. hole 20 feet below the potentiometric surface.

Four inch I.D. schedule-40 PVC pipe extending from the mine floor to the bottom of hole will be placed in the drill hole. The PVC pipe will be slotted (10-slot) from T.D. to approximately 5 ft. above the potentiometric surface.

A metal flush-mounted protective cap will be cemented into the mine floor to protect the well.

CASE 3: POTENTIOMETRIC SURFACE LIES GREATER THAN 100 FEET BELOW THE MINE FLOOR.

Drill a 6.5 in. hole 100 feet below the mine floor.

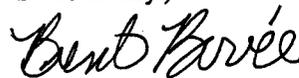
Install 4 in. schedule-40 PVC pipe from mine floor to T.D. The bottom 10 feet of the pipe will be slotted (10-slot).

A metal flush-mounted protective cap will be cemented into the mine floor to protect the well.

Drilling of these wells is planned for the third and fourth weeks of August, 1991. All drilling will be conducted in compliance with MSHA regulations.

If any further information is required please feel free contact me at EarthFax's Salt Lake City office (phone: 561-1555)

Sincerely,



Brent K. Bovee
Geologist

cc: David Darby, Division of Oil, Gas and Mining

July 31, 1991

Earthfax Engineering, Inc.
Attn: Brent K. Bovee
7324 South Union Park Avenue, Suite 100
Salt Lake City, Utah 84047

Re: Monitor Well Application 91-00102 MW
Expiration Date: January 31, 1992

Dear Mr. Bovee:

Reference is made to your request to drill two monitor wells within the Crandall Canyon Coal Mine. The wells are to be located in Section 36, T15S, R6E, SLB&M.

The information provided in your correspondence dated July 11, 1991 meets the State's requirements for the completion of monitor wells. Permission is hereby granted to complete the wells according to the scenarios in your request, and the potentiometric conditions at the drill sites.

1) This letter grants permission to proceed with the operation with the understanding that 6-1/2" diameter bore holes will be drilled and completed with 4" schedule 40 pvc casing. If screening is installed, it will be 10-slot pvc. A portion of the annulus of the bore hole will be cemented using Neat Cement. No more water is to be diverted than is necessary to determine the characteristics of the aquifer as required by the Division of Oil, Gas & Mining. Reports of your findings and volumes of water withdrawn must be submitted for each of the wells when your testing is completed.

2) Following the completion of drilling and testing, the wells must be either permanently or temporarily abandoned, as required by Section 12 of the State of Utah Administrative Rules for Well Drillers, adopted July 15, 1987.

3) The drilling contractor must be licensed in the State of Utah, and have a current license as required by the Utah State Engineer. Before starting, he must file with this Division a Notice of Intent to Drill Card. Within thirty days of completion or abandonment of the wells, the licensed driller must submit a Driller's Report, as specified under Section 4.3 of the Administrative Rules. Such report is to become part of the files in this Division pertaining to this project.

Monitor Well Application #91-93-02MW
Earthfax Engineering Inc.
July 31, 1991
Page 2

4) If water is to be used in the drilling operation, it must be of potable quality, and additives used in the drilling process or other contaminants from the drilling equipment or the mine work in the area must not be allowed to enter the bore hole. Each of the completed monitor wells must be finished with a screw on water tight cap to prevent water or other contaminants from entering the completed wells.

This is your authorization to have the licensed driller proceed with your monitor well project. Note that the expiration date of this permit is January 31, 1992.

Sincerely,



Mark P. Page, Price Area Engineer
for Robert L. Morgan, P.E.,
State Engineer

*P.O. Box 718
Price, UT 84501
637-1203*

cc: Jerry Bronicel - Division of Water Rights
Daron Haddock - Division of Oil, Gas & Mining

Kent Jones In SLC

RLM/MPP/mjk

DIVISION OF WATER RIGHTS
REQUEST FOR MONITOR WELL CONSTRUCTION

APPLICANTS NAME Earthfax Engineering Inc.

APPLICANTS ADDRESS 7324 South Union Park Avenue, Suite 100 Midvale, Utah 84047

INDIVIDUAL CONTACT Brent K. Bovee
Name
Phone

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CURRENT PROPERTY OWNER Genwal Coal Company - Crandall Canyon Mine

PROPOSED NUMBER OF WELLS Two DIAMETERS 4 inch APPROX. DEPTHS DIVISION OF OIL GAS & MINING

TYPE OF COMPLETIONS 6 1/2-inch bore hole, 4-inch schedule 40 pvc casing, 10-slot (Casing, intake, pvc screen installed, cement grout the annulus, flush mount protective gravel pack, grout, cap cemented into the mine floor. etc.)

PROJECT ENGINEER/MANAGER _____
Name
Address Phone

GENERAL LOCATION DESCRIPTION Crandall Canyon Mine COUNTY Emery

WELLS IN CONJUNCTION WITH (LEAKING) UNDERGROUND STORAGE TANKS Yes No
X

NAME OF LICENSED DRILLER _____
LICENSE # _____

PROPOSED CONSTRUCTION DATE August 19, 1991 ANTICIPATED COMPLETION DATE August 31, 1991

LOCATION OF WELLS:

1. N/S 500 FT. & E/W 3000 FT. FRM SW COR. or SW 1/4 SE 1/4 of SEC. 36 T 15 N/S R 6E SLEM/USM
2. N/S 2000 FT. & E/W 100 FT. FRM NE COR. or SE 1/4 NE 1/4 of SEC. 36 T 15 N/S R 6E SLEM/USM
3. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or _____ 1/4 _____ 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM
4. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or _____ 1/4 _____ 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM
5. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or _____ 1/4 _____ 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM
6. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or _____ 1/4 _____ 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM
7. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or _____ 1/4 _____ 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM
8. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or _____ 1/4 _____ 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM
9. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or _____ 1/4 _____ 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM
10. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or _____ 1/4 _____ 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM

(continued on reverse side)

Comments or explanation Note the three scenarios present in the request. Completion will be determined as the monitor wells are constructed. Completed depths will be determined by the potentiometric surface encountered during drilling.

DATE OF REQUEST July 18, 1991 APP/REJ DATE BY July 30, 1991
AREA OFFICE Southeastern - Price AUTHORIZATION # 91-93-02MW

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