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Date: August 13, 2003
Refer to: RRES-WQH: 03-196

Mr. Wayne Price
Petroleum Engineering Specialist
Oil Conservation Division
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

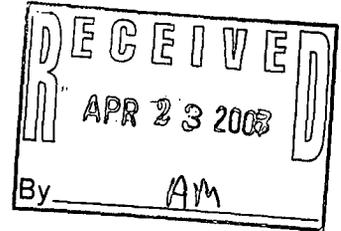
SUBJECT: FINAL CLOSURE REPORT, 1-MG SERVICE POND AND EE-2A WELLHEAD, FENTON HILL GEOTHERMAL FACILITY

Dear Mr. Price:

As you are aware, since October 2002, Los Alamos National Laboratory has been in the process of closing the Fenton Hill Hot Dry Rock Geothermal Facility's 1-million gallon (MG) service pond and the EE-2A wellhead. On February 7, 2003, the Laboratory submitted a progress report and proposed backfill plan (RRES-WQH: 03-031) that documented completion of the following closure activities:

1. Disposal of geothermal fluids and sludge from the 1-MG service pond;
2. Disposal of the 1-MG service pond's liner, geofiber matting, and leak collection piping;
3. Characterization of the soil beneath the pond's liners;
4. Development of a proposed backfill plan; and
5. Approval by the US Forest Service of the proposed backfill plan.

On February 14, 2003, your agency approved the Laboratory's proposed backfill plan for the 1-MG service pond. Closure activities were completed on July 29, 2003. This letter is Los Alamos National Laboratory's final report for the closure of the 1-MG service pond and the EE-2A wellhead. In addition, this letter presents the Laboratory's request for termination of Discharge Plan GW-031. Information on final closure is contained within Section I while the Laboratory's request for termination of Discharge Plan GW-031 is presented in Section II.



Section I-Final Closure Report

Following your agency's approval of the Laboratory's backfill plan for the 1-MG service pond, four outstanding activities remained before closure of the Fenton Hill Hot Dry Rock Geothermal Site could be completed. These four activities were:

1. Backfill and compaction of the 1-MG service pond;
2. Removal of the EE-2A wellhead;
3. Final grading and contouring of the site; and
4. Re-seeding and mulching the disturbed areas of the site.

A brief discussion of each of these activities is presented below.

1. Backfill and compaction of the 1-MG service pond. In accordance with the Laboratory's backfill plan, the crusher fines were consolidated into the bottom of the 1-MG service pond. Following this, the earthen berm that formed the southern boundary of the pond was backfilled over them. However, since the southern berm did not provide enough fill material to complete backfill, additional clean-fill was obtained from the following sources: (1) the NM Highway Department, and (2) the Fenton Hill site. All fill material used to backfill the 1-MG service pond was approved by the US Forest Service.
2. Removal of the EE-2A wellhead. Removal of the EE-2A wellhead was completed on April 4, 2003. The wellhead was cut-off at a depth of approximately 8 feet below finished grade. The Laboratory's subcontractor, L&R Oilfield Services, Farmington, NM, recycled the wellhead. A steel plate was welded to the top of the 7" casing that lists the following information: operator name, well number, section, township, and range. In addition, survey coordinates were collected for the EE-2A well at the same time the geodetic survey was conducted at the 1-MG service pond.
3. Final grading and contouring of the site. The final grade and site contour was approved by the US Forest Service following a March 12, 2003, tour of the site.
4. Re-seeding and mulching the disturbed areas of the site. On July 29, 2003, all disturbed areas surrounding the 1-MG service pond and EE-2A wellhead were re-seeded and mulched in accordance with the Closure Plan's seeding specifications (Appendix G). Following soil preparation with a disk harrow, a native seed mix approved by the US Forest Service was applied with a seed drill. A tackifier/fertilizer was hydraulically applied over the seed and then covered with a straw mulch. Attachment 1.0 contains photos of the re-seeded site.



Section II-Request for Termination of Discharge Plan GW-031

Closure of the 1-MG service pond and the removal of the EE-2A wellhead officially mark the end of nearly 30 years of hot dry rock geothermal research at the Fenton Hill site. The entire infrastructure supporting geothermal research at Fenton Hill has been removed or decommissioned. As a result, the Laboratory requests that your agency terminate Discharge Permit GW-031, issued by the NM OCD on June 5, 2000 (expiration date: June 5, 2005). The Fenton Hill site is available for a final inspection upon your request.

The Laboratory will continue to use the Fenton Hill site for astrophysical research (Milagro Project) and as an astronomical observatory for research and education. As you are aware, the Milagro Project uses a 5-MG pond filled with purified drinking water and light-sensitive detectors to record signals from cosmic events. In the past, the Milagro Project discharged, with your agency's approval, wastewater from its water treatment units to the 1-MG service pond. With the closure of the 1-MG service pond the Milagro Project is evaluating its wastewater disposal options. Off-site disposal is one option being considered since the quantities of wastewater generated by the Milagro Project are small and intermittent.

Please contact me at (505) 667-7969 should you have any questions regarding this final closure report and request for termination of Discharge Plan GW-031.

Sincerely,



Bob Beers
Water Quality & Hydrology Group

BB/tml

Attachment: a/s

Cy: J. Peterson, Forest Service; Jemez Ranger District, Jemez Springs, NM, w/att.
A. Ferrell, Forest Service, Jemez Ranger District, Jemez Springs, NM, w/att.
C. Linn, Forest Service, Santa Fe National Forest, Santa Fe, NM, w/att.
J. Vozella, DOE/OLASO, w/att., MS A316
G. Turner, DOE/OLASO, w/att., MS A316
J. Holt, ADO, w/att., MS A104
C. Webster, ADSR, w/att., MS A127
T. Wallace, EES-DO, w/att., MS D446
D. Pearson, EES-DO, w/att., MS D446
J. Hansen, EES-DO, w/att., MS D446
J. Thomson, EES-11, w/att., MS D443
G. Sinnis, P-23, w/att., MS H803

Cy (continued):

B. Ramsey, RRES-DO w/att., MS J591
K. Hargis, RRES-DO, w/att., MS J591
T. George, RRES-DO, w/att., MS J591
D. Stavert, RRES-EP, w/att., MS J591
D. McInroy, RRES-R, w/att., MS M992
T. Grieggs, RRES-SWRC, w/att., MS K490
S. Rae, RRES-WQH, w/att., MS K497
D. Rogers, RRES-WQH, w/att., MS K497
E. Louderbough, LC-ESH, w/att., MS A187
P. Wardwell, LC-ESH, w/att., MS A187
RRES-WQH File, w/att., MS K497
IM-5, w/att., MS A150





Figure 1.0. July 2003 photograph of the Fenton Hill geothermal site following re-seeding and mulching (looking east).



Figure 2.0. July 2003 photograph of the Fenton Hill geothermal site following re-seeding and mulching (looking north).