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Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

MARY FALLIN  
Governor

December 30, 2013

Robert Compernelle, President  
FMRI, Inc.  
#10 Tantalum Place  
Muskogee, Oklahoma 74403

Re: Proposed Closure Plan for ODEQ Permit No. OK001643  
FMRI, Inc., Muskogee County, Oklahoma  
Facility ID No. I-51000040

Dear Mr. Compernelle:

On October 2, 2013, DEQ received FMRI's proposed closure plan ("plan") for Ponds 6 & 7. Since Ponds 6 & 7 are "surface impoundments" under Oklahoma Water Quality regulations, they will be referred to as the "impoundments" in this letter. DEQ has reviewed the closure plan and found that it is not approvable for the following reasons:

1. The plan relies on sludge sampling done in 2007. This information is outdated and more recent sampling must be done to determine the best method for closing the impoundments.
2. Before any sludge or soil is removed, the sludge must be sampled. Oklahoma regulations require that pre-sampling and analysis plans be submitted prior to sampling (*see* OAC 252:616-13-2). However, in the interest of expediency, DEQ will not require FMRI to prepare pre-sampling plans, as long as, the sampling FMRI conducts meets the minimum requirements in this paragraph and FMRI submits a diagram of the sampling points in each impoundment with its revised closure plan:
  - a) The soil underneath the liners of both impoundments must be sampled after the impoundments are de-watered.
  - b) There must be no fewer than five samples (5 soil and 5 sludge) taken from each impoundment. The sampling must be representative of each impoundment; this means that the samples must be taken from different sections of each impoundment. FMRI shall submit, in its revised closure plan, diagrams showing where the samples were taken in each impoundment.
  - c) Each sample must be analyzed for the following constituents: Antimony, total; Arsenic, total; Beryllium, total; Cadmium, total; Chromium, total; Copper, total; Fluoride, total; Lead, total; Mercury, total; Nickel, total; Nitrate (N); Selenium, total; Silver, total; Thallium, total; Trichloroethylene (TCE); Volatile Organic Compounds (VOCs); Zinc, total. In addition at least one sample from each impoundment must be analyzed for toxicity, in accordance with 40 CFR 261.24, Table 1, using the Toxicity Characteristic Leaching Procedure (TCLP).



- d) The soil and sludge samples must be analyzed at a laboratory that is DEQ-accredited to analyze all of the constituents identified in the preceding paragraph.
3. The plan says that the closure will be a "Clean Closure." However, the plan does not meet OAC 252:616-13-3(d)(7), requirements for a clean closure, those requirements are as follows:
- a) Provide an evaluation of the feasibility of clean closure of the surface impoundment, tank system site including a discussion of available technology, extent of contamination, and other factors; and
  - b) Discuss target clean-up levels of wastewater, the possible risks at those levels, and the methods to be used to determine that clean closure has been achieved.
4. The plan states that soil removed from the impoundments will be relocated to surface impoundment 3 using standard earth moving equipment. However, surface impoundment 3 is out of service and there is no provision for protecting the relocated soil from the elements if the relocated soil is contaminated.
5. If more than one acre of land will be disturbed during the closure process, FMRI must obtain a Multi Sector General Permit (MSGP) for stormwater, prior to beginning closure activities.
6. The plan estimates that 40,000 cubic feet of sludge will be removed from the impoundments and placed in surface impoundments 8 and/or 9. Placing additional sludge, particularly in this amount, into a different surface impoundment will decrease the settling time in that impoundment and is not an approvable method of sludge disposal. FMRI must propose a method of sludge disposal that complies with OAC 252:616-13-3(d)(5).
7. The proposed closure plan does not provide a schedule for closure activities. FMRI must provide a time schedule indicating the major closure activities, approximate time to complete each activity, and the estimated date of final completion of all closure activities in accordance with OAC 252:616-13-3(d)(E).
8. The impoundments must be closed in accordance with both DEQ and NRC requirements. It is DEQ's understanding that NRC will require FMRI to perform radiological surveys of the impoundments prior to license termination. For this reason, DEQ is of the opinion that the radiological surveys should be done prior to backfill and closure. Further, FMRI must address the performance and timing of radiological surveys in the revised closure plan and schedule.
9. DEQ forwarded a copy of the plan to NRC and received comments. Those comments are attached for your review. (Please see NRC's cover letter and *Observations on FMRI Closure Plan for Ponds 6 and 7*). If you have further questions about NRC requirements, please contact NRC.

DEQ regulations governing closure of industrial surface impoundments can be found in OAC 252:616-13-1 through 5, and are available on the DEQ website at [www.deq.state.ok.us](http://www.deq.state.ok.us).

A revised, approvable closure plan that includes the sampling information (cited in Paragraph 2 above) must be received by DEQ no later than February 28, 2014. This deadline does not extend the deadlines in Task C (October 1, 2013) of the Consent Order. If FMRI fails to meet the February 28, 2014 deadline, stipulated penalties will be assessed from the October 1, 2013 deadline. If you have any questions, please contact Tad Dow at (405) 702-8204.

Sincerely,



Carol Paden, P.E., Manager  
Industrial Permits Section  
Water Quality Division

Enclosure

cc: James Burgess, FMRI, Inc  
James Shepherd, NRC  
Jack Parrott, NRC



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

Ms. Pamela Brown Dizikes, Attorney  
Office of the General Counsel  
Oklahoma Department of Environmental Quality  
707 North Robinson  
Oklahoma City, OK 73101-1677

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION COMMENTS ON FMRI'S  
CLOSURE PLAN FOR PONDS 6 AND 7 AT THE MUSKOGEE SITE

Dear Ms. Dizikes:

Thank you for the opportunity to comment on FMRI's Closure Plan for Ponds 6 and 7 of the Muskogee site waste water treatment system. The U.S. Nuclear Regulatory Commission (NRC) has no objection to the stated planned activities. However we note that FMRI does not address any NRC requirements for radiological surveys of the ponds prior to backfill and closure. These surveys are required by NRC regulations prior to termination of the NRC license in order to demonstrate the site meets radiological release criteria. Additional observations are in the Enclosure.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions concerning the above, please contact me at (301) 415-6712 or via email at [james.shepherd@nrc.gov](mailto:james.shepherd@nrc.gov).

Sincerely,

*Jim Shepherd*

J. C. Shepherd, Project Engineer  
Reactor Decommissioning Branch  
Division of Waste Management  
and Environmental Protection  
Office of Federal and State  
Environmental Management Programs

Docket No.: 40-7580

Enclosure:  
NRC Observations on FMRI Closure Plan

**U.S. NUCLEAR REGULATORY COMMISSION OBSERVATIONS ON  
FMRI CLOSURE PLAN FOR PONDS 6 AND 7**

1. Section 1.1 of the Plan states that Ponds 6 & 7 are not required for decommissioning of the site. This is not consistent with FMRI representations over the last decade about operation of the waste water treatment system. E.G. Sections 2.2.3, 2.4, 4.2.8, 4.4.1.3, of the January 2003 Decommissioning Plan (03 DP); Section III.M.1 of the July 2003 Disclosure Statement; and the Joint Authorization to Discharge Under the National Pollutant Discharge Elimination System and the Oklahoma Pollutant Discharge Elimination System, Permit No. OK0001643, effective as of May, 1997, as extended by the OKDEQ by letter dated May 2, 2002.
2. Section 2.1 is consistent with Section 3.5 of the 03 DP.
3. Section 2.2 is consistent with Section 3.7 of the 03 DP.
4. Section 2.3 is consistent with Section 3.6 of the 03 DP.
5. There is a difference in the reported depths of Ponds 6 and 7 between the Closure Plan and Table 2 of Appendix 15-1 of the 03 DP (7'-9' vs. 3').
6. There is no mention of radioactive surveys prior to filling in the ponds. In Tables 8 and 9 of the 1993 Remediation Assessment, uranium and thorium are identified in Ponds 6 and 7. As stated in Section 3.1 of the Plan, these ponds receive effluent from the wastewater treatment system that receives ground water from the interceptor trench that collects ground water from throughout the site. In several reports to NRC from 2005 onward, FMRI identified elevated concentrations of uranium in MW-74 that is adjacent to the interceptor trench. Therefore it is possible additional radioactive material has reached the ponds through the wastewater treatment system. Table 2.2.3 of the November 19, 2007 submittal by FMRI (Penn E&R) to ODEQ, "Pre-Closure Sampling and Analysis Report for Pond Nos. 6 and 7," reports gross alpha concentrations.
  - 6.1. Because these ponds are within the NRC-licensed area of the site and are impacted by radioactive material, FMRI must conduct radiological surveys of the ponds, as used, to demonstrate compliance with release criteria prior to license termination. Licensee surveys, and NRC confirmatory surveys, should occur before backfilling the ponds.
  - 6.2. Section 8.3.2 of the 03 DP states backfill for the ponds will be "below criteria." FMRI has not proposed concentration criteria for release for unrestricted use.
7. Section 5: Moving potentially radiologically contaminated material around the site is permitted. However, to demonstrate the site meets release criteria for license termination, the dose contributions from all residual radioactivity, as defined in 10 CFR 20.1003, must be included. Acceptable sampling schemes for contaminated areas are given in NRC guidance, e.g. NUREG-1575.
8. Section 6. By letter to NRC from AF Dohmann, dated May 25, 2004, former Pond 4 was the sanitary lagoon, constructed in 1957. That pond was removed from service when Pond 3 was constructed over it in 1979, and the site was connected to the city sewer system. The term "Post-closure maintenance" does not appear in the 03 DP. ODEQ may find reference to specific sections of the DP useful.

Enclosure