

**FILED**

**BEFORE THE ENVIRONMENTAL QUALITY COUNCIL  
STATE OF WYOMING**

**JAN 09 2014**

Jim Ruby, Executive Secretary  
Environmental Quality Council

**IN RE LINC ENERGY OPERATIONS, Inc.    )**  
**TFN 5 5/128                                    )**

**DOCKET NO. 13-4804**

**) FINDINGS OF FACT,**  
**) CONCLUSIONS OF LAW,**  
**) AND ORDER.**

On the 14<sup>TH</sup> day of November, 2013 at 9:00 a.m. the above entitled matter came on for final hearing in Cheyenne, Wyoming. The Hearing Officer was Vice Chairman David Searle. Council members present in person were, Vice-Chairman David Searle, Councilmen Tim Flitner, Andy Schwartz, and Dr. David Bagley and Councilwoman Meghan Lally. Present via video conference was Chairman Tom Coverdale and Councilman Rich Fairservis. The hearing lasted two days. On the second day Councilman Flitner, Chairman Coverdale and Councilman Fairservis appeared by phone.

Representing the Department of Environmental Quality was Jeremiah Williamson, Senior Asst. Attorney General. Representing Linc Energy was Bruce Salzburg. Representing the Petitioners was Shannon Anderson.

Present and testifying on behalf of the Department was Mark Rogaczewski, Program Manager, Land Quality Divison of DEQ; Muthu Kuchanur, Geology Supervisor Land Quality Division of DEQ and Don Fischer, North District Geological Supervisor, Groundwater Divison of DEQ. Present and testifying on behalf of Linc Energy was Brian Deurloo, General Manager of Clean Energy Wyoming, and Tom Osborne, Principal Hydrologist for Hydro Solutons Inc.. Testifying on behalf of the Petitioners was Jill Morrison, Organizer for Powder River Basin Resource Council. The Petitioner also called as a witness Kevin Frederick, Administrator, Water

Quality Division of DEQ.

Prior to the final hearing in this matter the Council heard arguments as to whether the EQC had jurisdiction over the issue of an aquifer exemption. After consideration of the briefs filed and oral arguments of the parties the Council found that it did have jurisdiction over the aquifer exemption issue.

The following Exhibits were offered and received. DEQ 1. LINC 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, and 29. PRBRC 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32

The following Exhibit was offered but not received: PRBRC 15.

PRBRC offered and then withdrew exhibit PRBRC 22.

#### **FINDINGS OF FACT**

1. Linc Energy (Linc) filed an application with the Land Quality Division of the Wyoming Department of Environmental Quality (DEQ) for an in situ mining license.
2. Based upon the review of the initial application the DEQ required Linc to first obtain a research and development license, pursuant to Wyo. Rev. Stat. Section 35-11-431 to demonstrate the feasibility of the process in Wyoming.
3. Linc then filed an application for a research and development license for in situ mining of the Wyodak formation through a gasification mining process.
4. The DEQ and Linc participated in 8 rounds of discussions regarding the technical aspects of the application
5. The Department published their intent to issue a R&D license to mine to the Company for four consecutive weeks beginning on the 6<sup>th</sup> day of September and ending on the 23<sup>rd</sup> day of September 2013. Contained within the notice was the notice of the Department's issuance of a

groundwater aquifer reclassification and a groundwater aquifer exemption.

6. The public had 30 days to comment on the proposed R&D license and the aquifer reclassification and exemption. On the 21st day of October, 2013 the Powder River Basin Resource Council (PRBRC) filed objections and request for hearing to the Departments intention to issue the R&D license.

7. The grounds for objection were:

a. The coal seams of the Fort Union Formation are regional aquifers, providing critical water resource to landowners and local governments.

b. The approval of Linc's request to reclassify and exempt this portion of the Fort Union Formation will set a dangerous precedent for future contamination from underground coal gasification and other industrial projects in the Powder River Basin, threatening the viability of this regional aquifer as a continued source of water

8. The project is estimated to last from 90 to 120 days. LINC EXHIBIT 1 13.14-9

9. The mining area is 80 acres in surface area located approximately 10 miles to the west of Wright, Wyoming. Wright is approximately 38 miles south of Gillette, Wyoming.

10. The coal seam and aquifer are called the Wyodak formation and at the time of the R&D license application was classified a Class III aquifer.

11. The Wyodak aquifer contains a seam of coal (hydrocarbon) that is approximately 30 feet thick and through the gasification process will be converted to a syngas that can then be processed into a variety of fuels. LINC EXHIBIT 1 PAGE 13.14-9

12. The aquifer at the location of the project produces 1 gallon per minute of water.

13. There are two rings of monitoring wells that provide critical information regarding the test site. The first ring, consists of 20 project trend wells that are utilized to control the



hydrostatic pressures within the overburden, underburden and the aquifer surrounding the gasifier. The second ring consists of 17 excursion wells that will monitor the aquifer to determine whether any contaminants have migrated from the test site. LINC EXHIBIT 1 PAGE 13.14-15

14. There are not any domestic, commercial or industrial wells within the boundaries of the permit area. The closest wells are two shut in coalbed methane wells. These two wells are just on the outside of the permit boundaries. The next closest wells are two commercial oil wells that are approximately 1 mile from the permit boundary. There aren't any potable-use wells within three miles of the project boundary. LINC EXHIBIT 1 PAGE 13.14-5; and LINC EXHIBIT 11; LINC EXHIBIT 14; and LINC EXHIBIT 15; and LINC EXHIBIT 16.

15. The coal seam is bounded by an interburden of sandstone, siltstone and shale with a thickness ranging from 104 feet to 332 feet. The overburden is comprised of shale and the overburden is from 24 to 30 feet in the vicinity of the project site. The underburden is comprised of shale and is approximately 10 feet thick in the area of the project site. LINC EXHIBIT 1 PAGE 13.14-4 AND 13.14-5 AND 13.14-7; LINC EXHIBIT 22.

16. If an excursion were to occur it is estimated that upon discovery the excursion could be reversed within one day. Based upon a contaminate fate and transport analysis of chloride and benzene any excursion of chloride would only be able to travel 200 feet from its source in the Wyodak aquifer in 5.8 to 10.8 years. In the overburden the same release would take 31.8 to 187 years to travel 200 feet and in the underburden it would take 9.4 to 26.2 years. For benzene it would take 100,000 years in the Wyodak, 38.1 to 262 in the overburden and 10.9 to 31.2 in the underburden. LINC EXHIBIT 1 PAGE 13.14-16

17. Linc Energy has 14 years of experience operating a coal gasification project in Australia

without contamination of groundwater.

18. Linc Energy is a majority owner of Yerostigaz, a commercial UCG facility in Uzbekistan which has 50 years of experience using coal gasification .

19. The license requires the aquifer to be restored to it's pre-development quality.

20. The process for clean up at the conclusion of the project is called Rocky Mountain 1 CRIP Cavity Decommissioning process. This process has been shown to be successful in cleaning up a site similar to the proposed site. LINC EXHIBIT 19 and 20

21. The target coal seam potentiometric surface has been lowered substantially from CBM development. The potentiometric levels within the coal seam are about 320 feet lower than the underburden aquifer and about 80 feet lower than the overlying overburden aquifer. LINC EXHIBIT 1 13.14-7

### **CONCLUSIONS OF LAW**

22. The EQC has jurisdiction over the parties and the subject matter of this proceeding pursuant to W.S. 35-11-112(a)(iv) and 406(k) and the Memorandum of Agreement between the State of Wyoming and the United States Environmental Protection Agency entered into in April 1983. LINC EXHIBIT 3

23. All notice requirements have been met.

24. Linc Energy's application meets all statutory and regulatory requirements. DEQ EXHIBIT 1.

25. None of the grounds enumerated in W.S. 35-11-406(k) exist to deny the issuance of Linc Energy license TFN 5 5/128.

26. The aquifer in the license area is a hydrocarbon bearing aquifer that is currently classified as a Class III aquifer by DEQ. The aquifer meets the requirements for classification as a Class

V aquifer.

27. The aquifer in the license area is not currently serving as a source for drinking water.

28. The aquifer in the license area will not in the future serve as a source of drinking water because it is not economically feasible.

29. The Petitioners bear the burden of proof to show that one of the statutory grounds enumerated in W.S. 35-11-406(k) exist to deny the issuance of Linc Energy R&D license TFN 5 4/191.

30. The burden of proof is preponderance of the evidence.

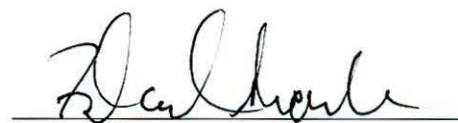
31. The Petitioner has failed to meet that burden.

32. Linc Energy's R&D license application is complete. The license application complies with all statutory and regulatory requirements.

**ORDER**

WHEREFORE, it is HEREBY ORDERED that the R&D license identified in **TFN 5 5/128** be issued by the DEQ to Linc Energy Operations Inc.

**DATED** this 9<sup>th</sup> day of January, 2014.



David Searle, Presiding Officer  
Environmental Quality Council



## CERTIFICATE OF SERVICE

I, Tyffanne Rowan, certify that at Cheyenne, Wyoming, on the 10<sup>th</sup> day of January, 2014, I served a copy of the foregoing **FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER** by electronic mail to the following:

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