Permit No. 0009-UR-2
AFIN 70-00101

AUTHORIZATION FOR A NO-DISCHARGE WATER PERMIT UNDER THE ARKANSAS WATER AND AIR POLLUTION CONTROL ACT

In accordance with the provisions of the Arkansas Water and Air Pollution Control Act (Ark. Code Ann. § 8-4-101 *et seq*.) and Arkansas Pollution Control and Ecology Commission (APC&EC) Rule No. 17:

LANXESS Corporation-West Plant
2226 Haynesville Highway
P.O. Box 7020
El Dorado, AR 71730

is authorized to operate and maintain one UIC Class I non-hazardous injection well at the LANXESS Corporation West Plant at the following location in Union County, AR.

Well	Location
WDW-14M	Section 15, Township 18 South, Range 17 West, Latitude 33° 09’ 16” North and Longitude 92° 51’ 04” West

Operation shall be in accordance with all conditions set forth in this permit.

Effective Date: November 1, 2020

Expiration Date: October 31, 2030

Robert E. Blanz Ph.D., P.E.
Associate Director, Office of Water Quality
Arkansas Department of Energy and Environment
Division of Environmental Quality

10/14/2020
Issue Date

SPECIFIC CONDITIONS

1. This permit is a renewal of the permit for the operation of the Underground Injection Control (UIC) Class I non-hazardous waste injection well WDW-14M. *[40 CFR § 144.31]*

2. Waste shall not be discharged from this operation to any Waters of the State other than the permitted injection intervals or onto the land in any manner that may result in runoff to surface Waters of the State. *[40 CFR §§ 144.12 and 144.35]*

3. The waste disposal system shall be operated and maintained in accordance with the final plans and specifications as approved by the Division of Environmental Quality (DEQ). *[40 CFR § 144.31]*

4. No extension or major modification of the system facilities may be made without the issuance of a new permit or permit modification. The DEQ shall be notified one hundred and eighty (180) days prior to any modification of the system which may require permit modification. *[40 CFR § 144.36]*

5. This permit is issued in reliance upon the statements and representations made in the application and associated documents. The DEQ has no responsibility for the proper functioning of the UIC well. *[40 CFR § 144.31]*

6. The permittee shall at all times ensure there is no-discharge of fluids to the ground surface or to the Waters of the State other than the permitted injection interval from the UIC wells or from any related structures at this facility. Any discharge or spill of any fluids from this system is strictly prohibited. The permittee shall notify the DEQ immediately, within 24 hours in the event of the release of any fluids to the ground surface or into the Waters of the State. This is a violation of the permit. *[40 CFR §§ 144.12 and 144.35]*

OPERATIONAL REQUIREMENTS

7. Reconstruction, Recompletion,or Modification

Any reconstruction, recompletion or modification of the injection facilities shall be done in accordance with the plans and specifications submitted with the permit application and the well completion report. **Any proposed changes to the construction and operation of the well, prior to implementation, must be submitted in writing to, and approved by, the DEQ as providing protection equivalent to or greater than the existing construction and operation.** *[40 CFR §§ 144.31 and 146.70]*

8. Formations Permitted For Injection

Injection shall be into a formation that is beneath the lowermost formation containing, within ¼ mile of the wellbore of WDW-14M, an Underground Source of Drinking Water (USDW). Permitted injection shall be confined to the injection interval noted in Table 1 and as described in Section IV.A.3 of the permit application:

Table 1		
Well	**Formation**	**Depth/Injection Interval**
WDW-14M	Hosston	+/- 4,700 to 5,400 ft bgl*

*bgl=below ground level elevation

9. Authorization of Specific Injection Intervals

The Permittee has authorization from the DEQ to inject fluids into the specific injection interval as described in this permit. **Fluid disposal into permitted injection intervals other than those authorized by the DEQ in Part I, Condition 8. of this permit shall be considered unauthorized injection, a violation under *40 CFR § 144.11* and shall subject the Permittee to possible enforcement action.**

10. Casing and Cementing

The well shall be cased and cemented as necessary to prevent the movement of fluids into or between USDWs, in accordance with *40 CFR § 144.12(a).* The cement and casing used in WDW-14M shall be designed for the life expectancy and closure period of the well.

11. Waste Stream

A. The Permittee is authorized to inject the waste stream with parameters as described in the permit application and with typical analysis as listed in Section VI, Tables VI-1 and VI-2.of the permit application and in Tables 3 and 4 of Part I, Condition 22 of this permit.

B. The waste stream shall consist of process wastewater derived from a variety of product manufacturing, handling, waste management and storage operations as a result of bromine and organic and inorganic chemicals production. The sources of the waste streams include the following:

i. The waste stream shall consist of debrominated or tail brine process wastewater derived from a variety of product manufacturing, handling, waste management and storage operations as a result of bromine, organic and inorganic chemicals production.

ii. Other associated wastes such as groundwater and rainfall contaminated by the above authorized wastes, spills of the above authorized wastes, wash waters, and solutions used in cleaning and servicing the waste disposal well system equipment which are compatible with the permitted waste streams, reservoir and well materials. This waste stream is non-continuous. The volume of waste generated by this part of the waste stream will be minuscule in comparison to the other wastes injected.

iii. Wastes generated during closure of the well and associated facilities that are compatible with permitted wastes, reservoir, and the well. This waste stream will occur as a one-time-only waste and the volume of waste generated by this part of the waste stream will be minuscule in comparison to the other wastes injected. This will consist of final flushes of the pre-injection tanks with water, water used to flush the downhole tubulars both before and after tubing/packer removal, and annulus fluid injected prior to plugging. Non-hazardous flush water/brine will also be displaced when the well is filled with cement.

C. The waste stream shall be filtered to at least 40 microns prior to injection.

D. EPA Publication SW-846 shall be used as guidance in order to accurately obtain an analysis of the waste stream, with acceptable Detection Limits (DL) or Practical Quantitation Limits (PQLs).

E. Wastes not authorized to be stored, processed, disposed, or otherwise handled as stipulated in this permit are shall not be injected into WDW-14M.

12. Operational Requirements

In accordance with *40 CFR § 146.13(a)*, operating requirements shall specify that the injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection interval during injection does not initiate new fractures or propagate existing fractures within the injection interval.

A. Injection shall be through tubing with packer. Injection between the casing and the wellbore is prohibited.

B. The Permittee shall maintain a fluid-filled annulus. The fluid shall be noncorrosive, or contain a corrosion inhibitor. If nitrogen is used to pressurize the annulus on a routine basis, the permittee shall bleed off the gas in the annulus when appropriate to keep the annulus at a full, fluid-filled volume. **The annulus pressure shall be constantly maintained at a differential of at least 100 psi above the injection pressure unless the well is being worked over or in the process of mechanical integrity testing.** *[40 CFR § 146.13 (a)(3)]*

C. The Permittee shall operate WDW-14M according to the following projected parameters in Table 2.

Table 2	
WDW-14M	
Maximum Surface Injection Pressure	1,100 psi
Maximum Rate of Injection	430 gpm
pH range	3.0 s.u. and 9.0 s.u
Maximum Daily Disposal Volume	619,200 gpd
Maximum Monthly Disposal Volume	18,576,000 gal/30-day-month
Maximum Monthly Disposal Volume	19,195,000 gal/31-day-month
Maximum Annual Disposal Volume	226,162,800 gallons/year

13. Instrumentation

In accordance with *40 CFR § 146.13(b)(2),* the Permittee shall install and use continuous monitoring devices. Systems shall be designed to shut off the well when pressures or flow rates as specified in Condition 14. A. and in Table 2 of Condition 12. C. of this permit exceed permitted operating conditions. The Permittee shall ensure that the wellhead monitoring instrumentation is properly installed and maintained at all times.

14. Measured Parameters

The following parameters shall be measured with the appropriate continuous recording device(s) housed in a weatherproof enclosure at or near the wellhead: *[40 CFR § 146.13(b)(2)]*

A. Injection tubing pressure, annulus pressure, flow rate, injection volume, and temperature of the injected fluids, pH; and

B. Any other parameters as requested by the DEQ or as specified by this permit.

TESTING REQUIREMENTS

15. Mechanical Integrity Testing

The Permittee shall maintain mechanical integrity of the injection well at all times in accordance with *40 CFR §§ 146.8 and 146.13(b)(3)*. An injection well has mechanical integrity if there is no leak in the casing, tubing or packer and there is no fluid movement upward out of the injection interval into the designated confining zone or USDWs through any vertical channels adjacent to the well bore.

16. Mechanical Integrity Requirements

Mechanical integrity shall be demonstrated annually and shall follow the requirements for demonstration of mechanical integrity for Class I non-hazardous UIC well as listed in *40 CFR §§ 146.8 and 146.13(b)(3)*. The anniversary date of testing shall coincide with the initial date from drilling of the well or an ADEQ-approved date. The annual test requirement may be extended upon approval by the DEQ for a maximum of 90 days past the anniversary date. All tests shall be completed prior to September 30 of the concurrent federal fiscal year. At any time after the well is shut in for more than 30 continuous days, an annulus test must be performed prior to resumption of injection. The following requirements are necessary to demonstrate mechanical integrity:

A. Annulus Pressure Test:

A yearly annulus pressure test (APT) to be witnessed by the DEQ or an authorized representative of the DEQ. An APT shall be conducted after each workover involving tubing removal and/or packer placement, and after each well shut-down in excess of thirty (30) days. *[40 CFR § 146.8(a)(1)]*

B. Pressure Falloff Test:

A yearly measurement of the pressure buildup in the injection interval, which includes shutting-in the well for a time sufficient to allow the pressure in the injection interval to reach equilibrium; *[40 CFR § 146.13(d)]*

C. Radioactive Tracer Test:

A radioactive tracer test (RAT) or other mechanical integrity test pursuant to 40 CFR *40 CFR §§ 146.8 and 146.13(b)(3)* shall be conducted once every five years for Class I UIC non-hazardous wells to determine the presence or absence of fluid movement behind the well casing.

D. Temperature Log or other test for fluid movement:

The DEQ reserves the right to require additional logs to be run at least once every five years to test for movement of fluid along the borehole if information becomes available that indicates the need for such a test(s). *[40 CFR § 146.8(c)(i)]*

E. Casing Inspection Logs:

Casing inspection logs shall be run whenever a workover is conducted in which the injection string is pulled. The DEQ may require that a casing inspection log be run every five years, if information exists that the integrity of the long string casing of the well may be adversely affected by naturally-occurring or man-made events. *[40 CFR § 146.13(c)(iii)]*

F. Any other appropriate test, after approval by the DEQ, may be used by the Permittee to evaluate mechanical integrity. *[40 CFR § 146.13(c)(ii)]*

The DEQ may require tests (A), (B), (C), or (E) above whenever the well are worked over, the tubing is removed, the packer is replaced, or if any information received by the DEQ indicates such tests may be warranted. The Permittee shall notify the DEQ and obtain approval prior to conducting any workover. *[40 CFR § 146.13(c)(iii)]*

The Permittee shall submit results of any of the above tests, including an interpretive analysis of each test, to the DEQ within sixty (60) days of the date of completion of the tests. *[40 CFR § 146.54]*

The DEQ reserves the right to require changes or adjustments in testing parameters if deemed necessary in order to demonstrate mechanical integrity. *[40 CFR § 146.12(c)(i)]*

17. Loss of Mechanical Integrity

A. If a loss of mechanical integrity occurs, during testing or during well operations, the Permittee shall do the following*:[40 CFR §§ 144.55 (b) and 146.7]*

i. Cease injection immediately;
ii. Take all steps necessary to determine if a release of waste into any unauthorized zones occurred;
iii. Notify the DEQ within 24 hours after the loss of integrity was discovered and when injection is expected to resume;
iv. Restore and demonstrate mechanical integrity to the satisfaction of the Director prior to resuming injection, and
v. Obtain approval from the DEQ prior to any workover.

B. In accordance with Part I, Condition 8. of this permit of this permit, if there is evidence of a release of waste into an unauthorized zone, the Permittee shall:

i. Immediately cease injection of fluids;
ii. Notify the DEQ within 24 hours after discovery;
iii. Take all necessary steps to characterize the extent of the release;
iv. Comply with and implement the remediation plan approved by the DEQ;
v. Where such a release is into a USDW, serving as a water supply, publish a notice into a newspaper of general circulation; and
vi. Where such a release is into a USDW, conduct ground water monitoring, as described in Part II Condition 13. *[40 CFR § 146.13 (d)]*

The DEQ may allow the Permittee to resume injection prior to completing the remediation action, provided that the Permittee is able to demonstrate that the injection operation will not endanger any USDWs. *[40 CFR § 146.13]*

MONITORING AND REPORTING

18. Monthly Reporting Requirements

The Permittee shall compile Monthly Reports containing the following information:

A. Results of continuous monitoring, including:

i. The monthly maximum, minimum, and average injection pressure;
ii. The monthly maximum, minimum, and average injection flow rate;
iii. The total injection volume for the month;
iv. The maximum, minimum, and average annulus pressure for the month;
v. The maximum, minimum, and average pH of the injected waste stream for the month;
vi. The maximum, minimum, and average temperatures of the injected waste stream for the month; and
vii. The maximum, minimum, and average daily specific gravity measurements.

B. The Monthly Reports shall be submitted as part of the quarterly reports to the DEQ. *[40 CFR § 146.13 (c)]*

19. Quarterly Reporting Requirements

A. The Permittee shall submit Quarterly Reports to the DEQ, within 20 days after the end of each calendar quarter, as described in 40 CFR *§§ 146.13(c) and 146.69*. These Quarterly Reports shall contain the following information:

i. The Monthly Reports specified in Part I. 18 of this permit;
ii. Documentation of all noncompliance incidents or exceedances of operating parameters, violations, excursions, equipment malfunctions or events triggering an alarm or shut-down device, workovers, well testing, well stimulations and any other pertinent information concerning well operations during the quarter; and,
iii. The Permittee shall analyze the injected waste stream at a frequency approved by the DEQ and submit the results with a report of the same frequency, i.e. quarterly analyses will be reported in quarterly reports. This analysis shall include the physical, chemical and other relevant characteristics of the injection fluids in accordance with the Waste Analysis Plan (WAP) as described in Part I. 22. of this permit. The DEQ reserves the right, at its discretion, to require the permittee to implement more frequent testing in the event information indicates changes in the waste stream.

B. These reports may be submitted in a hard copy, electronically via e-mail, or on a CD or similar recording media. With any of these methods, the cover letter and signature pages with original signatures and professional seals shall be scanned for compliance with the signatory requirements of Part II. 24. of this permit.

C. Any noncompliance incident, exceedance, or other violation as described in Part II. 13. of the permit shall be reported within twenty-four (24) hours and include the information required in Part II 13. B. of this permit.

20. Annual Reporting Requirements

The Permittee shall submit an Annual Report, due by March 1st of the following calendar year, to the DEQ that contains the following information *[40 CFR §§ 144.54 (c), 146.13(c), and 146.69]:*

A. Results of continuous monitoring, including:

i. The maximum, minimum, and yearly average of the injection pressure;
ii. The maximum, minimum, and yearly average of the injection flow rate;
iii. The maximum, minimum, and yearly average annulus pressure;
iv. The maximum, minimum, and yearly average for the pH of the injected waste stream; and
v. The total injection volume for the year and for the total lifetime injection volume for each well.

B. Documentation of all noncompliance incidents, violations, excursions, equipment malfunctions, and/or any other pertinent information concerning well operations;

C. A narrative covering all aspects of well operations for the year, including discussions of, and reasons for, any excursions from permitted operational parameters, any violations, and actions taken to correct the violations;

D. Discussion of any tests done to ensure the mechanical integrity of the well during the year, including the dates and times of those tests and certification by the Permittee that the well has demonstrated mechanical integrity;

E. The results and dates of any other tests performed on the well such as workovers or acid stimulations;

F. A direct measurement of bottom-hole pressure or a calculation of bottom-hole pressure using the specific gravity of the fluid in the well and the static fluid level, discussion of pressure effects of disposal operations upon the injection intervals and specific injection intervals, and a calculation of pressure build-up within the injection intervals;

G. An estimation of the distance from the well to the front of the injected fluids;

H. To the extent such information is reasonably available, the report shall also include:

   i. Locations of newly constructed and discovered wells within the zone of endangering influence or cone of influence;
   ii. Data for all newly constructed and discovered wells that penetrate, or penetrate to within, 300 feet of the top of the injection intervals that are located within a one-half (½) mile radius of WDW-14M;

I. Results of corrosion monitoring, as specified in Part I. 21. of this permit (if applicable);

J. Results of the waste stream analysis as described in Part I. 22. of this permit; and

K. Monitoring data as described in Part I. 23. of this permit.

L. These reports may be submitted in a hard copy, electronically via e-mail, or on a CD or similar recording media. With any of these methods, the cover letter and signature pages with original signatures and professional seals shall be scanned for compliance with the signatory requirements of Part II. 24. of this permit.

21. Corrosion Monitoring

Upon wellhead leak, annulus failure, casing leak, or other mechanical integrity failure that causes or has the potential to cause the well construction materials to fail, the Permittee shall prepare and submit to the DEQ a plan for corrosion monitoring of the well materials. The monitoring program shall consist of the following:

A. The Permittee shall demonstrate that the waste stream will be compatible with the well materials in which it will be in contact and shall submit the methodology used in making that determination to the DEQ in accordance with 40 CFR *§146.68(c)(2)*. For purposes of this requirement, compatibility is established if contact with the waste fluids will not cause the well materials to fail to satisfy any design requirement imposed under *40 CFR §146.65(b).*

B. The Permittee shall be required to initiate continuous corrosion monitoring of the construction materials used in the well. Such a test may include the following:

i. Placing coupons of well construction materials in contact with the waste stream;
ii. Routing the waste stream through a loop of well construction materials; or
iii. Using an alternative method approved by the DEQ.

C. The Permittee shall monitor the materials for loss of mass and thickness, cracking, pitting or any other signs of corrosion on a quarterly basis to ensure the well components meet the minimum standards set forth in *40 CFR § 146.65(b).* Results of corrosion monitoring shall be submitted to the DEQ with the Annual Reports, as described in Part I. Condition 23. of this permit.

22. Waste Fluid Analysis

Records of monitoring information shall include the location, time of sampling or measurements, the individual(s) who performed the sampling or measurements, the date(s) analyses were performed, the analytical techniques or methods used, the results of such analyses, and any other information required by the DEQ, in accordance with the approved Waste Analysis Plan (WAP) and *40 CFR § 146.13(b)(1).*

A. Waste Analysis Plan

The Permittee shall monitor the injected waste stream on an annual basis, in accordance with a Plan that describes the procedures and methods used to obtain a representative result of the waste stream. The Plan shall be submitted to the DEQ for approval prior to implementation. The plan should include, at a minimum:

i. The parameters used to analyze the waste and reason for selecting these parameters; and
ii. The test methods used for these parameters;

iii. The sampling method used to obtain a representative sample; and
iv. The location where the sample is to be taken.
v. A waiver of quarterly analysis may be submitted to and approved by the DEQ. In order to obtain this waiver, the Permittee must demonstrate a consistent waste stream for two (2) years. At the end of one year and based upon the analytical results and facility processes, the permittee may request a revision of quarterly sampling to annual sampling.
vi. The Permittee shall conduct sampling on the waste stream when a process change occurs at the plant that could result in the waste stream being altered. The Permittee shall ensure that the WAP remains current and accurate, and shall make updates or changes when the DEQ requires modification to keep the analysis representative of the waste stream.

B. Table 3 is a description of the typical analysis of the West Plant tail brine.

Table 3	
Constituent	**Range**
Boron 0.1-0.2 %	Boron 0.1-0.2 %
Aluminum 5-10 ppm	Aluminum 5-10 ppm
Barium 10-30 ppm	Barium 10-30 ppm
Calcium Chloride 4.0-8.0 %	Calcium Chloride 4.0-8.0 %
Iron 10-30 ppm	Iron 10-30 ppm
Lithium Chloride 0.02-0.04 %	Lithium Chloride 0.02-0.04 %
Magnesium Chloride 0.3-0.6 %	Magnesium Chloride 0.3-0.6 %
Manganese 10-30 ppm	Manganese 10-30 ppm
Potassium Chloride 0.2-0.4 %	Potassium Chloride 0.2-0.4 %
Silicon 10-30 ppm	Silicon 10-30 ppm
Sodium Chloride	10-15 %
Strontium 0.3-0.7 %	Strontium 0.3-0.7 %
Phosphates 30-300 ppm	Phosphates 30-300 ppm
Sulfates 30-300 ppm	Sulfates 30-300 ppm
Density 1.0-1.3	Density 1.0-1.3
pH 3.0-9.0	pH 3.0-9.0
Temperature 70°F to 220°F	Temperature 70°F to 220°F

Source: LANXESS (formerly Great Lakes Chemical Corporation), 1991

C. Table 4 is a description of the chemical analysis of the injectate for WDW-14M:

Table 4				
Parameters	**Units**	**2016 Analyses**	**2017 Analyses**	**2018 Analyses**
Metals				
Arsenic	mg/L	<0.5	0.58	<0.05
Barium	mg/L	8.9	9.7	8.82
Cadmium	mg/L	<0.04	<0.04	<.025
Chromium	mg/L	<0.07	0.01	0.05
Lead	mg/L	<0.4	<0.4	<.05
Mercury	mg/L	<0.002	<0.002	<0.002
Selenium	mg/L	<0.7	<0.7	<0.250
Silver	mg/L	<0.07	<0.07	<0.05
Base Neutral and Acid Compounds				
2-Methylnaphthalene	µg/L	5.0	5.1	4.4
Napthalene	µg/L	6.6	5.8	7.9
Phenol	µg/L	5.0	14.0	ND
Phenanthrene	µg/L	µg/L	5.0	0.4
Organochlorine Pesticides and PCBs	µg/L	ND	ND	NA
Volatile Organic Compounds	µg/L	NA	NA	ND

Note: ND = not detected
NA = not analyzed

23. Ground Water Monitoring Program

Upon annulus failure, casing leak, or other mechanical integrity failure that causes or may have caused a release into or between a USDW, the Permittee shall immediately cease injection and shall not resume injection until approved in writing by the DEQ. Prior to the resumption of injection, the Permittee shall prepare a plan for monitoring of the ground water quality in the USDW. Ground water monitoring shall be required in order to assure that injected fluids are not moving into or between any USDWs as described in 40 CFR § 146.13(b)(4). The monitoring program shall consist of the following:

A. Appropriate sampling frequency, as determined by the DEQ;

B. Monitoring parameters shall consist of the same program for waste stream analysis as described in the Waste Analysis Plan in Part I.22. of this permit;

C. Newly installed monitor wells or nearby water supply wells constructed at appropriate depths may be used for this purpose; and

D. Other conditions as may be required by the DEQ.

CLOSURE

WDW-14M shall be plugged in a manner which shall prohibit the movement of fluids into or between USDWs in accordance with 40 CFR §§ 144.51(o) and 146.10. The Permittee shall prepare, maintain and comply with the Closure Plan (plugging and abandonment plan) as submitted with the permit application. The Closure Plan is incorporated by reference and shall be made a part of this permit. The obligation to implement the Closure Plan survives the termination of the permit or cessation of injection activities.

24. Final Abandonment

Upon final abandonment, the Permittee shall ensure that WDW-14M is plugged in accordance with the approved Closure Plan submitted with the permit application and approved by the DEQ. *[40 CFR § 146.10]*

25. Changes to the Plugging and Abandonment Plan

The Permittee shall submit to the DEQ any modifications to the Closure Plan and must demonstrate that the changes will provide protection equivalent to or greater than the original design criteria and standards. Any change to a Closure Plan shall be treated as a minor modification of the permit in accordance with 40 CFR § 144.41(g) and must be approved by the DEQ.

26. Closure Plan

The Closure Plan shall include the following *[40 CFR § 146.10]*:

A. Cementing plan, including stages of cement circulation and methods;

B. Elevations of cement plugs;

C. Type and quantity of cement and other materials to be used for plugging;

D. Proposed tests or other measures;

E. Amount, size and location of casing to remain in the well;

F. Procedure to be used to meet the requirements of Part I. 24.,25., and 26..of this permit;

G. Estimated cost of closure; and

H. Other information as required by the DEQ.

27. Temporary Halt of Injection

A. The Permittee may temporarily cease injection into WDW-14M provided the Permittee has received authorization from the DEQ and has described the actions or procedures taken to ensure that WDW-14M will not endanger USDWs during the temporary period of disuse. The Permittee shall also comply with the terms and conditions of this permit during that period of disuse.

B. An APT shall be conducted after each well shut-down in excess of thirty (30) days.

C. If WDW-14M has ceased operations for more than two (2) years, the Permittee shall notify the DEQ prior to resuming injection activities and shall be required to perform a demonstration of mechanical integrity as described in Part I. Condition 16. of this permit. The Permittee shall be required to implement the Closure Plan as described in Part I. Conditions 24., 25., and 26.,. of this permit at the end of the two (2) years unless granted approval by the DEQ to postpone the well closure. *[40 CFR § 144.52 (a)(6a)]*

28. Notice of Intent to Close

The Permittee shall notify the DEQ sixty (60) days prior to commencement of closure. The Permittee shall give notification of the intent to plug at least seventy-two (72) hours prior to the commencement of actual plugging operations. *[40 CFR §§ 144.51 (n) and 146.10]*

29. Standards for Well Closure

A. The mechanical integrity of the well shall be verified prior to plugging according the methods described in Part I. Condition 16. of this permit and must be approved by the DEQ prior to commencing closure activities.

B. The pressure decay shall be observed and recorded for a time approved by the DEQ.

C. The well shall be flushed with a buffer fluid as approved by the DEQ.

D. The well shall be plugged with cement in a manner that will not allow the movement of fluids into or between USDWs by circulating from total depth to surface. The cement must be tagged and pressure tested in a manner approved by the DEQ before closure is finalized. *[40 CFR § 146.10 (a)]*

30. Closure Report

Within 60 days after closure, the Permittee shall submit a Closure Report detailing the plugging and abandonment procedures. The report shall be signed and stamped or sealed and certified as accurate by the Arkansas Licensed Professional Engineer in good standing and/or the Arkansas Registered Professional Geologist in good standing who supervised the work performed for the closure operation and must consist of a statement that the well was closed in accordance with the plugging and abandonment plan previously submitted and approved, or when the actual closure differed from the plan, a statement specifying the differences between the plan and the actual closure activities. [40 CFR § 146.10] The report shall include the following, at a minimum:

A. Pressure in the injection interval prior to injection activities;

B. Measured bottom hole pressure in the injection interval at the time of closure;

C. Calculated position of the waste fluid front at the time of closure;

D. Discussion of the verification of mechanical integrity; and

E. Other information as required by the DEQ.

31. Post-Closure Care

The Permittee shall prepare, maintain and comply with a plan for post-closure care if corrective action as described in Part I. Condition 17. of this permit and in *CFR § 146.72* of this permit is required. The obligation to implement the post-closure plan survives the termination, or cessation of injection activities. The plan shall be submitted to the DEQ with the Notice of Intent to Close, and shall become a condition of this permit upon approval by the DEQ. Any revision or modification to the post-closure care plan must be submitted to and approved by the DEQ prior to the submission of the closure report as specified in Part I. Condition 30. of this permit. The Permittee shall also assure financial assurance in accordance with Part I. Conditions 32. and 33. of this permit. The plan shall include the following:

A. Status of any corrective action required in accordance with Part I. Condition 17. of this permit;

B. Estimated cost of the proposed post-closure care;

C. Submission of a survey plat to the local zoning authority and the DEQ which indicates the location of WDW-14M relative to permanently surveyed benchmarks;

D. Notification to the Arkansas Oil and Gas Commission, the Arkansas Water Well Commission, or other agencies that have authority over other drilling activities to enable such agency or agencies to impose conditions over such drilling activities that may penetrate WDW-14M injection or confining zones;

E. Retain all records for a period of three (3) years following closure;

F. Record a deed notation or some other instrument that will provide any potential purchaser the information that the location has been used to manage non-hazardous waste fluids; and

G. Other information as required by the DEQ.

FINANCIAL ASSURANCE

The Permittee shall establish financial assurance for the plugging and abandonment of WDW-14M through the mechanisms described in 40 CFR § 144.52(a)(7).

32. Cost Estimate

A. The Permittee must prepare a written present worth estimate of the cost of plugging and abandoning WDW-14M in accordance with the plugging and abandonment plan as specified in Part I. Conditions 32. and 33. of this permit. The plugging and abandonment cost estimate must equal the cost of plugging and abandonment at the point in the facility's operating life when the extent and manner of its operation would make plugging and abandonment the most expensive, as indicated by the plugging and abandonment plan.

B. The Permittee must adjust the plugging and abandonment cost estimate for inflation within 30 days after each anniversary date on which the first plugging and abandonment cost estimate was prepared. The adjustment must be made in accordance with the requirements of 40 CFR § 144.62(b). The Permittee must also revise the plugging and abandonment cost estimate whenever a change in the plugging and abandonment plan increases the cost of the plugging and abandonment activities.

33. Options for Financial Assurance

The Permittee must establish financial assurance through the mechanisms described in 40 CFR §§ 144.63(c), 144.63(d) and 144.63(f).

A. Surety Bond

The Permittee shall submit a surety bond guaranteeing performance of plugging and abandonment to the DEQ Director in accordance with 40 CFR § 144.63(c)(1). Three (3) original signed copies shall be submitted. The bond shall be effective prior to the DEQ Director granting written approval for injection to commence. The surety company must be among those listed as acceptable sureties on the Federal bonds in Circular 570 of the U.S. Department of Treasury. The DEQ will supply the necessary copies to the Permittee for signature that follows the wording described in 40 CFR § 144.70(c).

B. Plugging and Abandonment Letter of Credit

The Permittee shall submit a letter of credit guaranteeing an amount at least equal to the current plugging and abandonment cost estimate as described in 40 CFR § 144.63(d) and follows the wording described in 40 CFR § 144.70(d). A standby trust fund shall also be established, in accordance with 40 CFR 144.63(d)(3).

C. Financial Test and Corporate Guarantee

The Permittee shall pass a financial test and meet the criteria of 40 CFR §§ 144.63(f)(1)(i) or (f)(1)(ii). If the Permittee meets these criteria, the Permittee shall submit a letter to the DEQ Director which is signed by the Permittee's chief financial operator and worded as specified in 40 CFR § 144.70(f) and to include the items required by 40 CFR § 144.63(f). The Permittee shall submit updated information within 90 days after the close of each succeeding fiscal year.

D. The Permittee shall secure and maintain in full force and effect at all times a financial assurance mechanism, in a form acceptable to the DEQ, to provide for the proper closure, plugging and abandonment of WDW-14M in the amounts set forth below. This permit does not authorize underground injection of fluids unless the Permittee has in effect an acceptable financial assurance mechanism acceptable to the DEQ.

E. The Mizuho Bank, Ltd. Submitted on behalf of the Permittee an Irrevocable Letter of Credit (No. 007436155) on May 11, 2020 for up to the aggregate amount of One Million, Six Hundred Twenty Five Thousand, Five Hundred Ninety Three U.S. Dollars and Twenty Cents ($1,625,593.20). This letter of credit is effective as of February 4, 2020 and shall expire on February 4, 2021, but such expiration date shall be automatically extended for a period of one year on February 4, 2021and each successive expiration date, unless, at least 120 days before the current expiration date, The Mizuho Bank, Ltd. notifies both DEQ and LANXESS by certified mail that they have decided not to extend this letter of credit beyond the current expiration date. In the event DEQ is so notified, any unused portion of the credit shall be available upon presentation of the sight draft for 120 days after the date of receipt by both DEQ and LANXESS as shown on the signed return receipts.

F. An updated closure cost estimate was submitted to the DEQ on January 29, 2019 which listed $236,184.20 as the required amount for the UIC Financial Assurance for closure of WDW-14M.

STANDARD CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Arkansas Water and Air Pollution Control Act (Ark. Code Ann. § 8-4-101 *et seq.*) and is grounds for civil and administrative enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

The Arkansas Water and Air Pollution Control Act (Ark. Code Ann. § 8-4-101 *et seq.*) provides that any person who violates any provisions of a permit issued under the Act shall be guilty of a misdemeanor and upon conviction thereof shall be subject to imprisonment for not more than one (1) year, or a fine of not more than twenty-five thousand dollars ($25,000) or both for each day of such violation. Any person who violates any provision of a permit issued under the Act may also be subject to civil penalty in such amount as the court shall find appropriate, not to exceed ten thousand dollars ($10,000) for each day of such violation. The fact that any such violation may constitute a misdemeanor shall not be a bar to the maintenance of such civil action.

3. Permit Actions

A. This permit may be modified; revoked and reissued; or terminated for cause including, but not limited to the following:

i. Violation of any terms or conditions of this permit;
ii. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;
iii. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination; or
iv. Failure of the permittee to comply with the provisions of Arkansas Pollution Control and Ecology Commission (APC&EC) Rule No. 9 (Fee Rule).

B. The filing of a request by the permittee for a permit modification; revocation and reissuance; termination; or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

4. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Any false or materially misleading representation or concealment of information required to be reported by the provisions of this permit or

applicable state statutes or rules which defeats the regulatory purposes of the permit may subject the permittee to criminal enforcement pursuant to the Arkansas Water and Air Pollution Control Act (Ark. Code Ann. § 8-4-101 *et seq.*).

5. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act and Section 106 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

6. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or rule.

7. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or rules.

8. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provisions of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

9. Permit Fees

The permittee shall comply with all applicable permit fee requirements (i.e., including annual permit fees following the initial permit fee that will be invoiced every year the permit is active) for no-discharge permits as described in APC&EC Rule No. 9 (Fee Rule). Failure to promptly remit all required fees shall be grounds for the Director to initiate action to revoke this permit.

10. Proper Operation and Maintenance

A. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

B. The permittee shall provide an adequate and trained operating staff which is duly qualified to carry out operation, maintenance and testing functions required to insure compliance with the conditions of this permit.

11. Duty to Mitigate

The permittee shall take all reasonable steps to prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health, the environment, or the water receiving the discharge.

12. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of waste waters shall be disposed of in an approved manner such as to prevent any pollutant from such materials from entering the waters of the State.

13. Reporting of Violations and Unauthorized Discharges

A. Any violations to this permit must be reported to the Enforcement Branch of the Office of Water Quality (OWQ) immediately (within 24 hours). Any leaks or seeps shall be reported to the OWQ and appropriately corrected. Any discharge from the fluids storage system such as an overflow, a broken pipe, etc., shall be immediately reported to the OWQ.

B. The operator shall visually monitor and report immediately (within 24 hours) to the Enforcement Branch any unauthorized discharge from any facility caused by dike or structural failure; equipment breakdown; human error; etc., and shall follow up with a written report within five (5) days of such occurrence. The written report shall contain the following:

i. A description of the permit violation and its cause;
ii. The period of the violation, including exact times and dates;
iii. If the violation has not been corrected, the anticipated time expected to correct the violation; and

iv. Steps taken or planned to reduce, eliminate, and prevent the recurrence of the violation.

C. Reports shall be submitted to the Enforcement Branch at the following address:

Division of Environmental Quality
Office of Water Quality, Enforcement Branch
5301 Northshore Dr.
North Little Rock, Arkansas 72118
Fax (501) 682-0880

Or

Water-enforcement-report@adeq.state.ar.us

14. Penalties for Tampering

The Arkansas Water and Air Pollution Control Act (Ark. Code Ann. § 8-4-101 *et seq.*) provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under the Act shall be guilty of a misdemeanor and upon conviction thereof shall be subject to imprisonment for not more than one (1) year or a fine of not more than ten thousand dollars ($10,000) or by both such fine and imprisonment.

15. Laboratory Analysis

All laboratory analyses submitted to the OWQ shall be completed by a laboratory accredited by Arkansas Department of Energy and Environment (ADEE) under Ark. Code Ann. § 8-2-201 et seq. Analyses for the permittee's internal quality control or process control do not need to be performed by an ADEE accredited laboratory..

16. Retention of Records

The permittee shall retain records of all monitoring information, copies of all reports required by this permit, and records of all data used to complete the application for this permit for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time.

17. Record Contents

Records and monitoring information shall include:

A. The date, exact place, time, and methods of sampling or measurements, and preservatives used, if any;

B. The individuals(s) who performed the sampling or measurements;

C. The date(s) the analyses were performed;

D. The individual(s) who performed the analyses;

E. The analytical techniques or methods used; and

F. The measurements and results of such analyses.

18. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

A. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

B. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

C. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit,

D. Sample, inspect, or monitor at reasonable times, for the purposes of assuring permit compliance any substances or parameters at any location.

19. Planned Changes

The permittee shall give notice and provide the necessary information to the Director for review and approval prior to any planned physical alterations or additions to the permitted facility.

20. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

21. Transfers

The permit is nontransferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Act.

22. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying; revoking and reissuing; terminating this permit; or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit. Information shall be submitted in the form, manner and time frame requested by the Director.

23. Duty to reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The complete application shall be submitted at least 180 days before the expiration date of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date. Conditions of this permit will continue in effect past the expiration date pending issuance of a new permit, if:

A. The permittee has submitted a timely and complete application; and

B. The Director, through no fault of the permittee, does not issue a new permit prior to the expiration date of the previous permit..

24. Signatory Requirements

A. All applications, reports, or information submitted to the Director shall be signed and certified. All permit applications shall be signed as follows:

i. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

a. A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

b. The manager of one or more manufacturing, production, or operation facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including: having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and rules; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

ii. For a partnership or sole proprietorship: by a general partner or proprietor, respectively; or

iii. For a municipality, State, Federal, or other public agency; by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

a. The chief executive officer of the agency, or

b. A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

B. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

i. The authorization is made in writing by a person described above.

ii. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

iii. The written authorization is submitted to the Director.

C. Any person signing a document under this section shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

25. Availability of Reports

Except for data determined to be confidential under the Arkansas Trade Secrets Act (Ark. Code Ann. § 4-75-601 *et seq.*) all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division of Environmental Quality. The name and address of any permit applicant or permittee, permit applications, and permits shall not be considered confidential..

26. Penalties for Falsification of Reports

The Arkansas Air and Water Pollution Control Act provides that any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under this

permit shall be subject to civil penalties and/or criminal penalties under the authority of the Arkansas Water and Air Pollution Control Act (Ark. Code Ann. § 8-4-101 *et seq.*)).

27. Applicable Federal, State, or Local Requirements

Permittees are responsible for compliance with all applicable terms and conditions of this permit. Receipt of this permit does not relieve any operator of the responsibility to comply with any other applicable Federal, State, or local statute, ordinance policy, or rule.

DEFINITIONS

"Act" means the Arkansas Water and Air Pollution Control Act, as amended, Ark. Code Ann. § 8-4-101 *et seq*.) as amended.

"APC&EC" means the Arkansas Pollution Control and Ecology Commission.

"APT" means Annulus Pressure Test.

"bgs" means below ground surface.

"**bkb**" means below kelly bushing.

"brine" means salt brines of the Smackover Formation (Oxfordian, Upper Jurassic) in south-central Arkansas. Bromine is present in extremely high concentrations in this brine.

"core" means a cylindrical sample taken from a formation for geological analysis.

"casing" means a pipe or tubing of appropriate material, of varying diameter and weight, lowered into a borehole during or after drilling in order to support the sides of the hole and prevent the walls from caving, to prevent loss of drilling mud or fluids into porous ground or to prevent water, gas, or other fluid from entering or leaving the hole.

"cement" means a powder consisting of alumina, silica, lime, and other substances that hardens when mixed with water. Extensively used in the oil industry to bond casing to the walls of the wellbore.

"**CFR**" means Code of Federal Regulations.

"confining unit" means a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement above an injection interval.

"**DL**" means Detection Limits.

"debrominated brine" means salt brines that have had the bromine extracted from them. This is also commonly called tail brine.

"Director" means the Director of the Department of Energy and Environment(E&E).

"Division" means the Division of Environmental Quality (DEQ) unless used in context of another agency.

"gpm" means gallons per minute.

"ground water" means water below the land surface in an aquifer's zone of saturation.

"injection interval" means a geological formation, group of formations, or part of formation receiving fluids through a well. It is part of the injection interval.

"injection well" means a well into which fluids are being injected.

"injection zone" means a geological formation, group of formations, or part of formation including the injection interval.

"LANXESS" means LANXESS Corporation

"log" means noun: a systematic recording of data, such as a driller's log, mud log, electrical well log, or radioactivity log. Many different logs are run in wells to discern various characteristics of downhole formation. Also, verb: to record data.

"long string casing" means the string of casing that is set in the injection interval.

"mechanical integrity" means a condition of injection wells which exists if there is no leakage in the well's casing, tubing, or packer and if there is no fluid movement into an underground source of drinking water through vertical channels adjacent to the well bore.

"**MIT**" means Mechanical Integrity Test.

"packer" means a piece of downhole equipment that consists of a sealing device, a holding or setting device, and an inside passage for fluids.

"perforation" means a hole made in the casing, cement, and formation through which formation fluids enter a wellbore.

"plugging" means the act or process of stopping the flow of water, oil, or gas into or out of a formation through a borehole or well penetrating that formation by the placement of cement plugs in the wellbore.

"**PQL"** means Practical Quantitation Limits.

"**psi**" means pounds per square inch.

"**RAT**" means Radioactive Tracer Test.

"SDWA" means the Safe Drinking Water Act.

"severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in products.

"**s.u.**" means standard units.

"surface casing" means the outer casing cemented in the upper portion of the well bore to protect fresh water formations from contamination.

"TDS" means total dissolved solids.

"tubing" means a relatively small-diameter pipe that is run into a well to serve as a conduit for the passage of fluids.

"**UIC**" means Underground Injection Control.

"**USDW**" means Underground Source of Drinking Water having less than ten thousand ppm total dissolved solids (TDS).

"**WDW**" means Waste Disposal Well.

"well" means a bored, drilled, or driven shaft whose depth is greater than the largest surface dimension; or, a dug hole whose depth is greater than the largest surface dimension; or, an improved sinkhole; or, a subsurface fluid distribution system.

MONTHLY: is defined as a calendar month or any portion of a calendar month for monitoring requirement frequency of once/month or more frequently.

QUARTERLY: (1) is defined as a fixed calendar quarter or any part of the fixed calendar quarter for a non-seasonal effluent characteristic with a measurement frequency of once/quarter. Fixed calendar quarters are: January through March, April through June, July through September, and October through December; or (2) is defined as a fixed three (3) month period (or any part of the fixed three month period) of or dependent upon the seasons specified in the permit for a seasonal effluent characteristic with a monitoring requirement frequency of once/quarter that does not does not coincide with the fixed calendar quarter. Seasonal calendar quarters are: May through July, August through October, November through January, and February through April.

SEMI-ANNUAL: is defined as the fixed time periods January through June, and July through December (or any portion thereof) for an effluent characteristic with a measurement frequency of once/six (6) months or twice/year.

ANNUAL or YEARLY: is defined as a fixed calendar year or any portion of the fixed calendar year for an effluent characteristic or parameter with a measurement frequency of once/year. A calendar year is January through December, or any portion thereof.

STATEMENT OF BASIS

This Statement of Basis is for information and justification of the permit limits only and is not enforceable. This permit decision is for renewal of a No-Discharge operation under Permit Number: 0009-UR-2 and AFIN: 70-00101.

1. Permitting Authority

Arkansas Department of Energy and Environment
Division of Environmental Quality (DEQ)
Office of Water Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

2. Applicant

LANXESS Corporation
2226 Haynesville Highway
P.O. Box 7020
El Dorado, AR 71730

3. Facility Location

The facility located as follows: From Hwy 82 in Cairo, take Hopewell Rd. south 5.9 miles to Mt. Willie Rd., then 0.6 mile to Trull Rd., then 0.4 mile north to well site near the community of Three Creeks in Section 15, Township 18 S, Range 17 W, in Union County, Arkansas at the following coordinates:

WDW-14M Latitude: 33.1544 North Longitude: 92.851 West

4. Receiving Stream Location

The well location is as follows: WDW-14M, 1,380 feet; from Three Creeks in Stream Segment 2E of the Ouachita River basin which is not listed in the latest ADEQ 303(d) list of impaired waters.

5. Consultants for this Facility

Ronney McGowen, AR P.G. 2031
Bryan Bell, AR P.E. 17089
Terradynamics, Inc.
2300 Green Hill Drive Suite 700
Round Rock, TX 78664
Telephone: (512) 795-8183

6. Permit History

A. Permit 0009-U was issued to LANXESS as a No-Discharge UIC permit on August 14, 1992, with an effective date of September 17, 1992, and with an expiration date of September 16, 2002, for the operation and maintenance of the Class I non-hazardous waste disposal well 14-M.

B. Permit No. 0009-UR-1 was issued to LANXESS as a No-Discharge UIC disposal permit on February 28, 2010, with an effective date of March 1, 2010, and with an expiration date of February 28, 2020, for the operation of the Class I non-hazardous waste disposal well 14-M.

7. Permit Activity

Previous Permit No.: 0009-UR-1
Previous AFIN: 70-00101
Effective Date: March 1, 2010
Expiration Date: February 28, 2020

The permittee submitted a permit renewal application on September 9, 2019, with additional informtion received October 1, November 20, December 3, 2019.It is proposed that the current water No-Discharge permit be reissued for a ten-year term. The following updates are documented in this renewal permit:

A. LANXESS was acquired by LanXESS on May 1, 2017.

B. The change of previous permit 0009-UR-1 Part I Condition 8. (b) from requiring the annulus pressure to be maintained at a minimum of 100 psi to requiring the annulus pressure to be maintained at positive annulus pressure of at least a 100 psi differential above the injection pressure unless the well is being tested or worked over.

C. The Mizuho Bank, Ltd. Submitted on behalf of the Permittee an Irrevocable Letter of Credit (No. 007436155) for up to the aggregate amount of One Million, Six Hundred Twenty Five Thousand, Five Hundred Ninety Three U.S. Dollars and Twenty Cents ($1,625,593.20). This letter of credit is effective as of February 4, 2020 and shall expire on February 4, 2021, but such expiration date shall be automatically extended

for a period of one year on February 4,2021and each successive expiration date, unless, at least 120 days before the current expiration date, The Mizuho Bank, Ltd. notify both DEQ and LANXESS by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event DEQ is so notified, any unused portion of the credit shall be available upon presentation of the sight draft for 120 days after the date of receipt by both DEQ and LANXESS as shown on the signed return receipts.

Legal Order Review:

There are currently no active Consent Administrative Orders (CAOs) or Notice of Violations (NOVs) for this facility.

Site Visits/Inspections:

An inspection of this facility was conducted on September 25, 2019. No violations were noted at the time of inspection.

8. Applicant Activity

Under the standard industrial classification (SIC) codes 2819 and 2869, Industrial Organic Chemicals, Not Elsewhere Classified, the applicant activities are the operation of a UIC Class I non-hazardous disposal well associated with a bromine recovery and brine management and pretreatment system.

9. Basis For Permit Conditions

The Division of Environmental Quality has made a tentative determination to issue a permit for the no-discharge facility as described in the application and waste management plan. Permit requirements and conditions are based on regulations pursuant to the Arkansas Water and Air Pollution Control Act (Ark. Code Ann. 8-4-101 *et seq.* and A.C.A. Sec. 8-4-201 *et seq*.) Standard Conditions have been included in this permit based on the sources listed below and generally accepted scientific knowledge, engineering practices, and the authority of the Arkansas Water and Air Pollution Control Act (Ark. Code Ann. § 8-4-101 *et. seq*.).

10. Point of Contact

The following staff contributed to the preparation of this permit:

Linda Hanson, M.Sc., P.G., Geologist P.G.
Permits Branch, Office of Water Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317
501-682-0646

E-mail: hanson@adeq.state.ar.us

Technical review:

Jamal Solaimanian, Ph.D., P.E.
Engineer Supervisor, No Discharge Section
Permits Branch, Office of Water Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317
501-682-0620
E-mail: jamal@adeq.state.ar.us

11. Sources

The following Sources were used to draft the permit:

A. Code of Federal Regulation, Title 40, §§ 144, 145, 146, 147, and 148.

B. The Safe Drinking Water Act, 1974

C. Arkansas Water and Air Pollution Control Act. (Ark. Code Ann. 8-4-101 *et seq.).*

D. APC&EC Rule 1, Prevention of Pollution by Oil Field Waste, as amended.

E. APC&EC Rule No. 2, Establishing Water Quality Standards for Surface Waters of the State of Arkansas, as amended.

F. APC&EC Rule No. 8, Administrative Procedures, as revised.

G. APC&EC Rule No. 9, Permit Fee Rules, as revised.

H. APC&EC Rule No. 17, Arkansas Underground Injection Control Code, as amended.

I. US EPA Region 5-UIC Section Regional Guidance 5: Determination of the Mechanical Integrity of Injection Wells, February 2008. https://www.epa.gov/sites/production/files/2015-09/documents/r5-deepwell-guidance5-determation-mechanical-integrity-200802.pdf

J. US EPA Region 5-UIC Section Regional Guidance 8: Preparing a Waste Analysis Plan at Class I Injection Well Facilities, January 21, 1994. https://www.epa.gov/sites/production/files/2015-09/documents/r5-deepwell-guidance8-preparing-waste-analysis-plan-class2-19940121-8pp.pdf

K. US EPA Region 5-UIC Section Regional Guidance 7: Determination of Maximum Injection Pressure for Class I Wells, January 1994.

https://www.epa.gov/sites/production/files/2015-09/documents/r5-deepwell-guidance7-determination-maximum-injection-pressure-class1-199401-9pp.pdf

L. DEQ 2018 303(d) final list of impaired waters.

M. US EPA Region 6 Approval of reissuance for an exemption to land disposal restrictions of the Hazardous and Solid Waste Amendments of 1984 to the Resource Conservation and Recovery Act, August 31, 2011.

N. US EPA Publication SW-846-Hazardous Waste Test Methods.

O. Application for Permit No. 0009-UR-2 received September 9, 2019.

P. Waste Analysis Plan received October 13, 2014.

Q. Annual Mechanical Integrity Testing (Pressure Fall-off Tests and Annulus Pressure Tests) conducted July 8, 2019.

R. Five-year Radioactive Tracer Surveys conducted June 6, 2018.

S. Email from Daniel Pilkington, Legal Division, regarding required amount of Financial Assurance for well closure.

T. DEQ field inspection conducted November 13, 2019.

U. Copy of Financial Insurance Mechanism received May 11, 2020.

V. May 12, 2020 email from Enforcement Branch regarding no enforcement action at present.

12. Public Notice

The public notice for the draft permit started on August 26, 2020 and ended on September 25, 2020. The OWQ did not receive any comments during the thirty (30) day comment period. A permit transfer form dated September 18, 2020 was received and addressed in the following response to comments.

RESPONSE TO COMMENTS
FINAL PERMITTING DECISION

Permit No.: 0009-UR-2

Applicant: LANXESS Corporation
West Plant Class I Non-hazardous UIC Well WDW-14M

Prepared by: Linda Hanson, Geologist, P.G.

The following are responses to comments received regarding the draft permit number above and are developed in accordance with APC&EC Rule 8 Administrative Procedures and Ark. Code. Ann. § 8-4-203(e)(2).

Introduction

The above permit was submitted for public comment on August 26, 2020. The public comment period ended on September 25, 2020. The Arkansas Department of Energy and Environment – Division of Environmental Quality ("DEQ") received no comments during the public comment period.

A permit transfer form was received on September 21, 2020 requesting that the name of the Great Lakes Chemical Corporation facilities in Union County be changed to LANXESS Corporation. Additionally, the responsible official is now Antonis Papadourakis, President and Chief Executive Officer, with an address of 111 RIDC Park West Drive, Pittsburgh, Pennsylvania, 15275.

Comment 1 A permit transfer form was received on September 21, 2020 requesting that the name of the permittee be changed from Great Lakes Chemical Corporation facilities in Union County to LANXESS Corporation. Additionally, the responsible official is now Antonis Papadourakis, President and Chief Executive Officer, with an address of 111 RIDC Park West Drive, Pittsburgh, Pennsylvania, 15275.

Commenter: Antonis Papadourakis

Response: The name of the permittee listed in the permit has been changed from Great Lakes Chemical Corporation to LANXESS Corporation.

Summary of Changes to the permit			
Part	Draft Permit	Final Permit	Comment #
All parts	The permit application and the draft permit listed Great Lakes Chemical Corporation as the permittee.	All references in the permit to Great Lakes Chemical Corporation have been changed to LANXESS Corporation.	1