RESPONSE TO COMMENTS
FINAL PERMITTING DECISION

Permit No.: 4584-WR-3

Applicant: 3M Company – 3M College Station

Prepared by: Colby Ungerank

The following are responses to comments received regarding the draft permit number above and are developed in accordance with regulations promulgated at APC&EC Regulation No. 8, Administrative Procedures and A.C.A. § 8-4-203(e)(2).

Introduction

The above referenced permit was submitted for public comment on 12/14/2014. The public comment period ended on 1/13/2015.

The following person sent a comment to the ADEQ during the public notice.

Commenter	# of comments raised
1. Wayne Neumann, 3M Company	1

Comment 1 Comment pertaining to No. 9 in the Statement of Basis for draft permit 4584-WR-3.

The ADEQ has chosen to assign a secondary SIC code of 4953. The legitimate SIC codes relating to the business that 3M performs at the College Station and Arch Street sites are 3295 for granule manufacturing and 1459 for crushed stone. The following is copied from the US Dept of Labor website regarding the major industrial group category 49.

This major group includes establishments engaged in the generation, transmission, and/or distribution of electricity or gas or steam. Such establishments may be combinations of any of the above three services and also include other types of services, such as transportation, communications, and refrigeration. Water and irrigation systems, and sanitary systems engaged in the collection and disposal of garbage, sewage, and other wastes by means of destroying or processing materials are also included. If one service of a combination system does not constitute 95 percent or more of revenues, the establishment should be classified as a combination in Industry Group 493, with the subgroup being determined by the major service supplied.

It is clear from the paragraph above that these codes are applied when revenues are involved. Unlike other facilities in Arkansas that have Land Application permits, the 3M Little Rock site receives no revenue from the operation of its onsite process water treatment basin or sludge generated therein and therefore any sic code relating to refuse, landfills etc. would be inaccurate. Furthermore, the category group 495 pertains to Sanitary Services. There is no sanitary waste associated with the process water treatment system.

Both the ADEQ and 3M strive to have the permits issued to 3M as accurate as possible. We feel the permit itself adequately describes the functions of what happens at the plant and the use of any sic code in major industrial category 49 totally misleading. We request you remove this from the Statement of Basis.

Response: The Department acknowledges this comment and understands the position of the permittee. However, the Department uses the primary Standard Industrial Classification (SIC) and the North American Industry Classification System (NAICS) codes to classify the operations of the permittee that is requesting a permit. As shown in the draft permit, the Department used the SIC code 3295 and NAICS code 212399 that describes the permittee's operation as a mining or quarrying of crushed or broken stone for the primary SIC and NAICS codes. The Department uses the secondary SIC and NAICS codes to track what type of activity is authorized with the issuance of this permit. Based on the operations described in the permittee's Waste Management Plan, the facility is collecting and disposing of waste treatment plant materials. The SIC code 4953 is for a refuse system, which primarily engaged in the collection and disposal of refuse by processing or destruction or in the operation of incinerators, waste treatment plants, landfills, or other sites for disposal of such materials. Therefore, the Department used the SIC code 4953 and NAICS code 56299 for the secondary SIC and NAICS codes in the draft permit to describe the activity authorized as land application of industrial waste. Based on this information, the Department has not made any changes to the final permit.

Permit No. 4584-WR-3
AFIN 60-00003

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*)

3M Company

is authorized to land apply industrial process water from the wastewater produced from the washdown of equipment, scrubber blowdown, water treatment system blowdown and stormwater at 3M College Station, 3110 Walter Dr., Little Rock, AR 72216 in Pulaski County at the following coordinates:

Latitude: 34° 42′ 06″ N Longitude: 92° 14′ 05″ W

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

The Response to Comments is attached.

Effective Date: **November 1, 2012**

Modification Effective Date: **April 1, 2015**

Expiration Date: **October 31, 2017**

Ellen Carpenter
Chief, Water Division
Arkansas Department of Environmental Quality

March 9, 2015
Modification Issue Date

PART I
PERMIT REQUIREMENTS

SECTION A. LIMITATIONS AND MONITORING REQUIREMENTS

The following tables detail the constituent limits, monitoring frequencies, and the requirements for reporting results to ADEQ for each respective parameter listed in the table heading.

TABLE I		
Waste Analysis		
Parameter	Cumulative Pollutant Loading Rate (lb/ac)	Monitoring Frequency
Arsenic	37	Annually, prior to 1st application of the calendar year
Cadmium	35	
Copper	1350	
Lead	270	
Mercury	15	
Molybdenum	N/A	
Nickel	378	
Selenium	90	
Zinc	2520	
Parameter	Limit (Reporting Units)	Monitoring Frequency
Total Solids	Report (Percentage (%))	Annually, prior to 1st application of the calendar year
Electrical Conductivity	Report (µmhos/cm)	
Nitrate Nitrogen	Report (mg/L)	
Nitrite Nitrogen		
Ammonia Nitrogen		
Total Kjeldahl Nitrogen		
Total Phosphorus		
Total Potassium		
Total Suspend Solids (TSS)		
Total Petroleum Hydrocarbons (TPH)	100 (mg/L)	
Sodium Absorption Ratio (SAR)	18.0 (Unitless)	
pH	6.0-10.0 (S.U.)	
Oil & Grease	Report (gallons/acre/ycar)	
Total Volume of Waste Applied		Prior to each application
Nitrogen Application Rate	[1,2]Depends on Crop (Lbs N/acre/year)	

[1] The land application of waste must not exceed the limits for Nitrogen Application Rate.
[2] Refer to Condition No. 3 of Part II of the permit.

TABLE II Soil Analysis		
Parameter	Limit (Reporting Units)	Monitoring Frequency
Elcctrical Conductivity	4 (mmhos/cm)	Annually, Prior to the 1st application of the calendar year.
Cation Exchange Capacity	Report (meq/100g)	
pH[1]	Report (S.U.)	
Sodium Adsorption Ratio (SAR)	12.0 (unitless)	
Nitrate-Nitrogen	Report (mg/kg)	Once every five (5) years
Phosphorus		
Potassium		
Arscnic		
Cadmium		
Copper		
Lead		
Mercury		
Molybdenum		
Nickel		
Selenium		
Zinc		

[1] If the resulting pH is 5.7 or lower, lime must be applied in accordance with recommendations from the University of Arkansas Cooperative Extension Service.

Part II
Specific Conditions

1. This permit is for the land application of treated process wastewater from the following sources: washdown of equipment, scrubber blowdown, water treatment system blowdown and stormwater. The wastewater is being land applied for irrigation in the permitted application area.

2. The land application operation shall be managed in accordance with the May 30, 2014 Waste Management Plan (WMP) and September 26, 2014 Addendum. If the WMP or the Addendum is inconsistent with this permit, the land application operation shall be managed in accordance with the terms of the permit and the WMP and the Addendum shall be revised to conform to the permit conditions.

3. Plant Available Nitrogen (PAN) shall be calculated using the following equations:

PAN Equations	
For Surface applied waste, PAN(mg/l)	$0.3(TKN - NH_3) + 0.5NH_3 + NO_3 + NO_2$
Conversion from PAN(mg/l) to PAN(lbs/1,000 gallons)	0.00834 * PAN(mg/l)

The waste must be applied at a rate (in units of 1,000 gallons/acre) that provides a quantity of PAN (lbs N/acre) that is equal to or less than the nitrogen uptake rate of the cover crop (lbs/acre). See the table below for a list of Nitrogen uptakes for crops authorized for land application under this permit. Any crop not listed in the following table may be added to the permit as a permit modification.

Nitrogen Uptake of Cover Crops			
Crop Name	Uptake (lbs/acre)	Crop Name	Uptake (lbs/acre)
Bermuda	300	Red Clover	100
Fescue	138	Wheat	83

4. Land application fields possessing forage crops shall maintain adequate vegetation (100% coverage with a minimum 80% density) to ensure the nitrogen uptake rate of the cover crop used to calculate the limit in Condition No. 3 is accurate.

5. The land application site is as follows:

Owner	Section(s)	Township	Range	Acres	Latitude	Longitude
3M Company	24	1 North	12 West	7	34° 42' 06" N	92° 14' 05" W

6. The permittee shall determine if the land application sites are currently permitted or in use by another user. In the event the Department determines that any land application sites under this permit is permitted for land application under another Water Division permit, the Department may void this permit and enforcement actions may be taken.

7. Surface applied waste must be evenly distributed over the entire application area.

8. Wastewater shall not be discharged from this operation to the waters of the State or onto the land in any manner that may result in runoff to waters of the State or ponding on the surface if the land.

9. The allowable slope of land application site depends on waste application method. Wastes authorized by Condition 1 and Condition 8 of Part II shall not be applied to the land application site with slopes greater than allowed by the table below.

Slope %	Acceptable Application
6	• Surface application of liquid waste
12	• Injection of liquid waste • Surface application of dewatered waste solids
15	• No application of liquid wastes without extensive runoff control • Surface application of dewatered waste with immediate incorporation

10. Land application is prohibited when the soils are saturated; frozen; covered with ice or snow; during precipitation events; or when precipitation is imminent (greater than 50% chance of precipitation predicted by the nearest National Weather Service station) within 24-hours.

11. Land application of waste in a flood plain shall not restrict the flow of the base flood, reduce the temporary storage capacity of the flood plain, or result in a washout of solid waste, so as to pose a hazard to human life, wildlife, or land and water uses.

12. The permittee shall not cause or contribute to the taking of life or the destruction or adverse modification of the known critical habitat of any endangered or threatened species of plant, fish or wildlife.

13. Waste must not be land applied within 100 feet of streams including intermittent streams, ponds, lakes, springs, sinkholes, rock outcrops, wells and water supplies; or 300 feet of extraordinary resource waters as defined by the Department's Regulation No. 2. Buffer distances for streams, ponds and lakes must be measured from the ordinary high water mark.

14. Waste must not be land applied within 50 feet of property lines or 300 feet of neighboring occupied buildings existing as of the date of the permit. The restrictions regarding property lines or neighboring buildings may be waived if the adjoining property is also approved as a land application site under a permit issued by the Department or if the adjoining property owner consents in writing.

15. All boundaries, cited in Condition 13 and 14 of Part II of the Permit, must be flagged prior to land applying.

16. The permittee must not land apply in a manner that will result in an exceedance of the Maximum Contaminant Levels promulgated under the Safe Drinking Water Act, as referenced in 40 C.F.R. Part 257, Appendix I. Land application must cease if evidence suggests that the facility is causing adverse impacts to groundwater.

17. Concrete wastewater storage basins shall maintain a minimum of one (1) foot six (6) inch freeboard at all times (as measured in one of the three open and interconnected cells of the basin).

18. The permittee must keep current records of the sludge from the wastewater treatment plant, which is shipped from the facility. The outgoing waste records must include: volumes of the waste, the name of the entity receiving the waste, type of waste, and shipping date.

19. Annual reports are due by May 1st of each year for the previous permitted months from January to December (i.e. Annual report is due on May 1st, 2015 for the 2014 calendar year). The annual reports shall include the following:

    A. land application dates;
    B. land application locations;
    C. quantities of waste applied in gallons per acre per year;
    D. methods of application;
    E. amounts of nutrients applied;
    F. total amount of PAN applied on each field (pounds/acre);
    G. cover crop of each field;
    H. total metals added (in that particular year) in lbs per acre;
    I. total metals applied to date; and
    J. copies of the waste and soil analyses.

    The annual reports shall be submitted to the following address:

    Arkansas Department of Environmental Quality
    Water Division, No-Discharge Section
    5301 Northshore Dr.
    North Little Rock, Arkansas 72118
    Fax (501) 682-0910

    Or

    Water-permit-application@adeq.state.ar.us

Part III
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 a civil penalty 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) Regulation No. 9 (Permit fees).

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 regulations 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 regulation.

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 regulations.

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 for no-discharge permits as described in APC&EC Regulation No. 9 (Regulation for the Fee System for Environmental Permits). 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 wastewaters shall be disposed of in a 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 Department immediately. Any leaks or seeps shall be reported to the Department and appropriately corrected. Any discharge from the fluids storage system such as an overflow, a broken pipe, etc., shall be immediately reported to the Department.

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:

Arkansas Department of Environmental Quality
Water Division, 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 Department shall be completed by a laboratory certified by ADEQ 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 ADEQ certified 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 or 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 regulations; 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 Department of Environmental Quality. As required by the Regulations, the name and address of any permit applicant or permittee, permit applications, permits, and effluent data 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 regulation.

Part IV
Definitions

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

"Department" means the Arkansas Department of Environmental Quality (ADEQ).

"Director" means the Director of the Arkansas Department of Environmental Quality.

"APCEC" means the Arkansas Pollution Control and Ecology Commission.

"Available Acreage" means total acreage minus buffer zones

"s.u." means standard units.

"Saturated soil" means a condition in which all easily drained voids (pores) between soil particles are temporarily or permanently filled with water, significant saturation during the growing season is considered to be usually one week or more. Soil saturation shall be indicated by the piezometers and soil classifiers recommendations.

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 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 coincide with the fixed calendar quarter. Seasonal calendar quarters 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/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

All changes to the Statement of Basis are italicized. This is a modification permit.

This Statement of Basis is for information and justification of the permit limits only and is not enforceable. This permit decision is for *modification* of a No-Discharge operation under permit number 4584-WR-3 and AFIN 60-00003.

1. Permitting Authority

Arkansas Department of Environmental Quality
Water Division, Permits Branch
5301 Northshore Dr.
North Little Rock, Arkansas 72118-5317

2. Applicant

3M Company – 3M College Station
P. O. Box 165860
Little Rock, AR 72216-5860

3. Facility Location

The facility located as follows: east of Little Rock city limits near the College Station community, north and east of Hwy. 365 in Pulaski County, Arkansas. The facility is located at the following coordinates:

Latitude: 34° 42′ 06″ N Longitude: 92° 14′ 05″ W

4. Receiving Stream Location

The land application site is located in Stream Segment 3C of the Arkansas River basin, which is not in the Nutrient Surplus Area. Surrounding areas were evaluated to determine if any Extraordinary Resource Waters (ERWs), Ecologically Sensitive Waterbodies (ESWs), Natural and Scenic Waterways (NSWs), or impaired streams in the 2008 ADEQ 303(d) List of Impaired Waterbodies in the State of Arkansas are near the land application site. The waterbody evaluation determined that the land application site is more than 10 miles away from any impacted waterway.

5. Consultant for this Facility

Rex Robbins, PE
FTN Associates, Ltd.
3 Innwood Circle
Little Rock, AR 72211

6. Permit History

A. *Permit 4584-W was issued to 3M Industrial Mineral Products Division and effective on October 1, 1999 for land application of process water and truck wash sediment.*
B. *Permit 4584-WR-1 was issued to 3M Industrial Mineral Products Division and effective on January 3, 2005 for the land application of industrial wastewater and truck wash sediment.*

C. *Permit 4584-WR-2 was renewed for 3M Company and effective on November 1, 2012 for the land application of process water from the wastewater produce from the washdown of equipment, scrubber blowdown, water treatment system blowdown and stormwater.*

7. Previous Permit Activity

Previous Permit No.: 4584-WR-2
Effective Date: November 1, 2012
Expiration Date: October 31, 2017

The permittee submitted a modification application for a No-Discharge permit which was received on May 30, 2014, with additional information received on July 17, 2014. It is proposed that the current water no-discharge permit be issued with an expiration date of October 31, 2017.

8. Significant Changes from the Previously Issued Permit

A. *Added a dewatering pad so the facility can dewater waste prior to transportation to a permitted landfill.*
B. *Allowed waste to be collected from any storage structures prior to land application.*
C. *Removed the monitoring requirement for magnesium, sodium, and calcium from the waste and soil analyses.*
D. *Removed the schedule of compliance, since the facility has already complied with schedule of compliance.*
E. *Revised Condition Nos. 2, 3, 4, 10, and 16 of Part II of the permit. See 14.B for more information.*
F. *Added Condition Nos. 13-15 of Part II of the permit. See 14.B for more information.*

9. Applicant Activity

A. Primary

Under the standard industrial classification (SIC) code 3295 or North American Industry Classification System (NAICS) code 212399, the applicant activities are the mining or quarrying of crushed or broken stone.

B. Secondary

Under the standard industrial classification (SIC) code 4953 or North American Industry Classification System (NAICS) code 56299, the applicant activities are a refuse system.

10. Waste Application Method

The 3M Company College Station produces roofing granules. Nepheline syenite is mined at a different location and is hauled to the plant. The facility produces the granules by crushing the rock and screening the rock to the appropriate size. A byproduct of this operation is the wastewater produced from the washdown of equipment, scrubber blowdown, water treatment system blowdown and stormwater. All of the *wastewater will be stored in* a 600,000 (operating capacity) gallon concrete storage basin with a 1 foot 6 inch freeboard *(as measured in one of the three open and interconnected cells of the basin), 10,000 gallon steel mixing tank (T-105), 8,000 gallon clear water tank (T-110), 8,000 gallon sludge holding tank (T-109), or 20,000 gallon portable tanks.* The concrete storage basin is equipped with a level sensor to notify high alarm status. *Wastewater will be transferred to the concrete storage basin or land applied directly from any storage structure.*

The facility will use tanker trucks will be used to transport the waste *from all storage structures* to the land application site. The wastewater will be land applied using a truck mounted spray bar or cannon spray. The haul routes for the trucks are located on property owned by 3M.

The solids collected in the storage structures will be placed on the Dewatering Concrete Pad (which drains back into the concrete storage basin). Prior to shipment to a landfill, the solids will be dewatered by drainage, evaporation, or some dry chemical addition. Once the solids are dewatered, the material will be trucked to a permitted landfill.

11. Total Available Acreage

The facility has 7 acres covered under this permit. The annual application of wastes is limited by the plant available nitrogen (PAN) equation and the nitrogen uptake rate of the cover crop, Condition No. 3 of Part II of the permit.

12. Additional Site Information

The land application site is owned by 3M and is designated by 3M as the "Reynolds Area", approximately ½ mile from the main plant.

13. List of All Land Application Site

See Permit Condition No. 5 of Part II.

14. Basis for Permit Conditions

The Arkansas Department of Environmental Quality has made a determination to issue a permit for the no-discharge facility as described in the application and waste management plan. Permit requirements and conditions are *authorized* pursuant to the Arkansas Water and Air Pollution Control Act (Ark. Code Ann. § 8-4-101 *et seq* and § 8-4-201 *et seq*) *and regulations promulgated thereunder.*

A. Part I – Permit Requirements

i. Monitoring Frequency

The monitoring frequency of once annually prior to the first land application is to ensure that a representative sample of what is being applied to the land is measured and recorded. In order to ensure over application of nutrients does not occur, the total volume of each waste must be measured and recorded daily from each waste stream. The parameters that must be measured at this frequency can be compared to the soil parameters if a problem arises to determine if the land application is the pollutant source.

Total volume of waste applied and the nitrogen application rate must be measured and recorded prior to each land application to prevent the over application of nutrients to the land.

ii. Waste Conditions

a. Reporting requirements for arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc in the waste

The Cumulative Pollutant Loading Rates (CPLRs) are adapted from EPA's risk assessment Title 40 of the Code of Federal Regulations Part 503 rule that governs the land application of sewage sludge. This assessment considered 14 different pathways of exposure to highly exposed individuals, including humans, animals (including small organisms) and plants. The CPLRs minimize the potential for the accumulation of metals in soils to concentrations that could have adverse effects on the environment. Due to the low concentrations of the metals in the waste analysis, the Department has not placed limits on the metals at this time.

b. Reporting requirements for percent total solids in the waste

This parameter is required to convert effluent analysis values between a wet and dry basis. Also, this parameter is required to ensure the permittee is not land applying waste that is considered to be solid material.

c. Reporting requirements for electrical conductivity of waste and reporting of the waste volume

The analysis of electrical conductivity is the measurement of the salinity of the waste. Over application of salt could affect plant growth. According to Wastewater Engineering Treatment and Reuse, 4th Edition, salts tend to concentrate in the root zone. With an increase in soil salinity in the root zone, plants expend more of their available energy on adjusting the salt concentration within the tissue to obtain needed water from the soil. Consequently, less energy is available for plant growth. While a limit has not been implemented in the permit cycle, the Department will review this information along with the electrical conductivity of the soil and may implement limits on electrical conductivity in the future, if deemed necessary.

d. Reporting requirements for all nitrogen compounds in the waste

These concentrations are required to calculate the plant available nitrogen to comply with Condition No. 3 of Part II of the permit.

e. Reporting requirements for potassium and phosphorus in waste

Due to the fact that the concentrations of phosphorus and potassium are above normal values in the soils at the 3M land application site, the Department has added reporting requirements for these two constituents in the land applied waste. These constituents are required for plant growth and are monitored to ensure crop nutrients are provided.

f. Removal of the monitoring and reporting requirements of calcium, magnesium, and sodium in the waste

These parameters were removed from the permit because the Department was only using these analyses to calculate SAR and laboratories are able to calculate SAR without reporting these parameters.

g. *Sodium Adsorption Ratio (SAR) reporting requirements in the waste*

SAR is a measure of sodicity hazard commonly used to evaluate irrigation water and soils for agricultural use. Because the waste will be land applied, the SAR needs to be evaluated to show the waste is acceptable for use. According to the Practical Handbook of Disturbed Land Revegetation (Munshower, 1994), when the SAR rises above 18 in the waste, serious physical soil problems arise and plants have difficulty absorbing water. The Department has decided to require the limit of 18 for waste being repeatedly applied to the land.

h. Limit and reporting requirement for Total Suspend Solids in the waste

These industrial wastewaters are known to contain high levels of Total Suspend Solids that could cause environmental risks if over applied to the land application sites. The Department will require the facility to monitor and report the wastewater on an annual basis since this parameter was not required by the previously issued permits. The Department may require a limit for this parameter in future permits.

i. Reporting requirements for Oil & Grease in the effluent

Excessive application of Oil & Grease has the potential to kill or prevent the growth of crops, as well as become a source of pollutants in groundwater and surface water. The Department may require a limit for this parameter in future permits.

j. pH range in the waste

APC&EC Regulation No. 2 states that as a result of discharge, the pH in streams or lakes must be in the 6.0-9.0 range. Since the waste will be land applied and treated by the soil, the Department has set range between 6.0-10.0. This pH range is required of the applied waste as a protective measure for Waters of the State. The pH of the waste must be reported to ensure that it will not negatively impact the pH of the soil.

k. Total Volume of Waste Applied

The total volume of waste applied is required in order to calculate the nitrogen loading. While a limit has not been implemented in this permit cycle, the Department will be reviewing this information and may implement limits on total volume of waste in the future, if deemed necessary.

l. Total petroleum hydrocarbons (TPH) limit and monitoring

TPH monitoring is required due to the fact that wastewater may come into contact with trace amounts of TPH from the product mixer washdowns and recycle water pumps. This wastewater is also used to clean up roofing granule material spills and the plant basement floor. The TPH concentration in wastewater to be land applied is limited to 100 mg/l, a rate the Department has defined as protective of the environment.

m. Nitrogen Application Rate

Land application of the waste covered under this permit is restricted by the nitrogen application rate. The nitrogen application rate is the amount of nitrogen applied to the land in pounds/acre/year. Using the nitrogen components of the waste analysis and the volume of waste applied, the nitrogen application rate shall be calculated using the equations provided in Condition 3 of Part II of the permit. In order to ensure the application of waste will not exceed the Plant Available Nitrogen (PAN) limit for the cover crop identified in Condition No. 3 of Part II of the permit, the nitrogen application rate must be calculated prior to each application.

iii. Soil Conditions

a. Limit for the electrical conductivity of the soil

The measurement of the electrical conductivity (EC) of the soil is used to determine the salinity or the amount of salts in the soil. In Soils: an Introduction to Soils and Plant Growth, an EC of 4 mmhos/cm or less is considered normal. Once the EC exceeds 4 mmhos/cm, the soil becomes Saline. Saline soils are known to reduce plant growth and affect soil permeability. *If results indicate that soil concentrations have increased, the Department may require cessation of land application activities, further testing, or remediation activities.*

b. Reporting requirements for pH of the soil

Soil pH must be monitored to ensure compliance with Table II of Part I of the permit. The acidic limit of 5.7 was adapted from the University of Arkansas Cooperative Extension Service (UAEX) Self-study Guide 8: Soil Fertility Management in Pastures Essential Nutrient for Plant Growth to maintain an optimal pH for plant growth. Also when the pH becomes too low, heavy metals are more soluble and therefore more susceptible to leaching to the groundwater.

c. Reporting requirement for Sodium Adsorption Ratio (SAR) in the soil

In addition to evaluating SAR in the waste, the SAR should also be monitored in the soils of the application sites. According to the Practical Handbook of Disturbed Land Revegetation (Munshower, 1994), when the SAR rises above 12 to 15 in the soil serious physical soil problems arise and plants have difficulty absorbing water. According to the 2009 ADEQ Landfarm Study, University of Arkansas soil scientist, Dr. Kristofor Brye, recommends that the SAR in soil be less than 12. SAR values above this range are considered undesirable conditions for plant growth. High sodium content disperses the soil and causes it to crust. Sodium also negatively influences the ability of water to infiltrate the soil. If results indicate that soil concentrations have increased, the Department may require cessation of land application activities, further testing, or remediation activities.

d. Removal of the reporting requirements for calcium, sodium, and magnesium from the soil analysis

These parameters were removed from the permit because the Department was only using these analyses to calculate SAR and laboratories are able to calculate SAR without reporting these parameters.

e. Reporting requirements for cation exchange capacity and nitrate-nitrogen in soils

These parameters are indicators of soil quality. The chemical condition of soil affects soil-plant relations, water quality, buffering capacities, availability of nutrients and water to plants and other organisms, mobility of contaminants, and some physical conditions. (USDA Natural Resources Conservation Service "Indicators for Soil Quality Evaluation" April 1996.) Reporting requirements are included to verify that problems from over-application of wastes or other sources are not occurring. If results indicate that soil concentrations have increased, the Department may require cessation of land application activities, further testing, or remediation activities.

f. Reporting requirements for potassium and phosphorus in soils

Phosphorus and potassium concentrations of the 3M land application site's soil are considerably higher than concentrations recommended for agricultural production. Although, the 3M site is not used for agriculture purposes, the elevated soil concentrations of phosphorus and potassium increase the risk of pollution to waters of the State via migration of these constituents from the site. Because of this concern and the presence of phosphorus and potassium in the waste, the analyses are required to monitor the concentrations in soil and the effect of the land application on the soils.

g. Reporting requirements for arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc in soils

The list of metal cations was adapted from 40 C.F.R. Part 503 for the land application of sewage sludge. Limits were not established due to the variability of analyzing the concentrations of these metals. Reporting requirements are included to verify that metals from land application of waste or other sources are not being applied at a rate that causes accumulation of metals to levels that could have adverse effects on the environment. If results indicate that soil concentrations have increased, the Department may require cessation of land application activities, further testing, or remediation activities.

iv. Schedule of Compliance

a. Removal of Schedule of Compliance

The previous renewal permit included a schedule of compliance, which required the permittee to demonstrate that they are not contaminating an underground drinking water source. The facility submitted a Groundwater Compliance Plan on January 30, 2013, which was the due date of the compliance plan.

Based on the Department's review of the study, the land application of 3M's wastewater on the approved land application site shows short-term compliance with 40 C.F.R. Part 257.3-4. The column test showed most of the parameters in the wastewater will be reduced by exposure to the first six (6) inches of soil to concentrations below the MCLs established in the National Primary Drinking Water Standards. There were three (3) parameters (Barium, Cadmium, and Fluoride) that showed an increase in concentration after the wastewater was exposed to the top six (6) inches of soil in the column study, but still resulted in concentrations below the MCLs established in the National Primary Drinking Water Standards.

Based on the information provided by the study the permittee has met the requirements of the Schedule of Compliance in Part I.B of the Permit. However, there was not sufficient data to show long-term compliance with 40 C.F.R. Part 257.3-4 for all of the parameters tested. Therefore, the facility will need to provide more justification on how the groundwater will not be contaminated with Barium, Cadmium, and Fluoride during the next renewal of the permit in 2017.

B. Part II – Specific Conditions

i. Plant Available Nitrogen (PAN) application limit

The Department has provided the proper Plant Available Nitrogen (PAN) equation in order to ensure the permittee does not exceed the nitrogen uptake of the cover crop. Any land application of industrial waste is limited by the nitrogen uptake of the cover crop and the PAN. The application rate is designed to provide the amount of nitrogen needed by the crop or vegetation and reduce the risk of nutrients running off into the waters of the State.

ii. Vegetation Cover Requirement

In order to ensure proper uptake of nitrogen, the land application site shall maintain 100% vegetative coverage with a minimum of 80% density. Furthermore, the vegetative coverage and density is also used for stabilization purposes to reduce the risk of soil erosion and runoff.

iii. Permit termination if the land application site is currently permitted under a previously issued permit

A site covered in more than one permit is at risk of over application of nutrients and metals. This condition encourages the applicant to confirm with the landowner that the site is not currently covered under another active permit before permitting the site.

iv. Even Application

In order to avoid over application to one area of the land application site, the waste shall be distributed evenly over the entire area of irrigation for the land application site. If the waste is over applied to one portion of the application site, there is potential for concentration on that portion of the site and the waste to runoff to the waters of the State.

v. No runoff or no discharge requirements

Discharge from this site is prohibited. Therefore, this permit includes specific requirements to ensure that no runoff containing potential pollutants will enter the waters of the State. These conditions are adapted from APC&EC Regulation 5.406 (A) & (B).

vi. Maximum allowable slope for the land application area

In order to protect waters of the State, additional measures must be taken to ensure contamination via runoff is prevented. Topography of the land application area affects the potential for runoff and erosion. The limits listed in Condition 9 of Part II of the permit were adapted from the Wastewater Engineering: Treatment and Reuse, 4th Edition, Table 14-51 as an acceptable maximum slope for the acceptable application of wastes.

vii. Land application during precipitation and saturated conditions

In order to protect waters of the State, additional measures must be taken to ensure contamination via runoff is prevented. Therefore, the Department adapted the associated conditions from APC&EC Regulation No. 5.406(B) that governs the liquid animal waste management systems. Land application of industrial waste is prohibited during a precipitation event or when significant precipitation is imminent. When land applying industrial waste there is a critical time to prevent runoff to the waters of the State, which is during land application and right after land application before the industrial waste has had time to absorb into the soil. In order to protect the environment, the Department defined the word "imminent" to mean greater than a 50% chance of precipitation predicted by the nearest National Weather Service station. When the National Weather Service station predicts greater than 50% chance of precipitation the Department believes there is a good chance of rain which could cause pollution to the waters of the State. Also, to ensure the facility will not land applying during precipitation, the operator must be present during any period of land application.

viii. Land application of waste to a flood plain

Land application of waste to a flood plain shall not increase the level of the base flood by one foot or more, to avoid increasing the velocity of the flow downstream of the site, reducing the temporary storage capacity of the flood plain, or increasing the levels of the flood waters.

ix. Habitat protection

This condition is adapted from 40 C.F.R. Part 503 and is included to ensure that endangered or threatened species are considered and protected during land application.

x. Buffer distances

Minimum buffer distances are required between land application areas and areas that may be vulnerable to water pollution in order to minimize the risk of nutrients or pollutants from leaving the field and reaching surface waters. Buffer distances were adapted from APC&EC Regulation 5.406(D), *Arkansas Department of Health's Rules and Regulations Pertaining to Onsite Wastewater Systems Section 10.5.7.2,* and generally accepted scientific knowledge and engineering practices.

xi. Flagged boundaries

In order to be protective of surface waters, minimum buffer distances have been established. In order to verify that the permittee will be applying waste within all of the required boundaries of the land application site(s), the Department will require all boundaries to be flagged prior to and be present during any land application events

xii. 40 C.F.R. Part 257 compliance requirements

A review of the permittee's previously issued NPDES permit (Permit No. AR0001686) showed metal limits were necessary in order for the permittee to meet water quality standards. Additional treatment would have been necessary to meet the new limit. In lieu of adding additional treatment, the permittee opted to land apply the waste through the authority of a no-discharge permit. *In order to protect groundwater, the permittee was required to demonstrate that the land application of waste is in compliance with 40 C.F.R. Part 257.3-4. The permittee chose to do so by the means of soil column study.*

D. Part III—Standard Conditions

Standard Conditions have been included in this permit based on 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.).

E. Part IV—Definitions

All definitions in Part IV of the permit are self-explanatory.

15. Point of Contact

The following staff contributed to the preparation of this permit:

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16. Sources

The following Sources were used to draft the permit:

A. Regulation No. 2, Water Quality Standards for Surface Waters of the State of Arkansas, as amended.
B. Regulation No. 5, Liquid Animal Waste Management Systems
C. Regulation No. 8, Administrative Procedures, as amended.
D. Regulation No. 9, Fee System for Environmental Permits, as amended.
E. 40 C.F.R. Parts 257 and 503.

F. Ark. Code Ann. § 8-4-101 et. seq., Arkansas Water and Air Pollution Control Act.
G. Ark. Code Ann. § 4-75-601 et. seq., Arkansas Trade Secrets Act.
H. Integrated Water Quality and Assessment Report (303(d) Report)
I. 2009 ADEQ Landfarm Study
J. Practical Handbook of Disturbed Land Revegetation, Munshower, 1994.
K. Wastewater Engineering: Treatment and Reuse: 4th Edition Table 14-51.
L. UAEX Self-Study Guide 8: Soil Fertility Management in Pastures essential Nutrient for Plant Growth
M. Soils: An Introduction to Soils and Plant Growth: 4th Edition; Donahue, Miller, & Shickluna; 1977.
N. USDA Part 651, Animal Waste Management Field Handbook.
O. Recommended Standards for Wastewater Facilities: 2004 Edition (Ten State Standards).
P. *ADH Rules and Regulation Pertaining to Onsite Wastewater Systems, December 2014.*
Q. Application No. 4584-WR-3 received May 30, 2014.
R. Additional Information received on July 17, 2014.