

STATE OF MISSOURI



PERMIT BOOK

DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 11 2 0 1 4 - 0 0 4 Project Number: 2014-09-024 Installation Number: 217-0051

Parent Company: Nutra-Flo Company, Inc.

Parent Company Address: 216 Cunningham Drive, Sioux City, IA 51106

Installation Name: Nutra-Flo Nevada Plant

Installation Address: 3000 Industrial Parkway, Nevada, MO 64772

Location Information: Vernon County, S27, T36N, R31W

Application for Authority to Construct was made for:

The installation of an animal feed ingredient processing plant, which is being relocated to Nevada, Missouri from Sioux City, Iowa. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, Construction Permits Required.

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

NOV 1 0 2014

EFFECTIVE DATE

Ronald B. Hilde for Lynn P. Ross

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of startup of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources' regional office responsible for the area within which you are located within 15 days after the actual startup of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Nutra-Flo

Vernon County, S27, T36N, R31W

1. Control Device Requirement-Baghouse
 - A. Nutra-Flo shall control particulate emissions from all conveying equipment, all storage vessels, and the bagging operation (collectively EP-BLD1) using a baghouse, as specified in the permit application.
 - B. The baghouse shall be operated and maintained in accordance with the manufacturer's specifications. The baghouse shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that Department of Natural Resources' employees may easily observe them.
 - C. Replacement filters for the baghouse shall be kept on hand at all times. The bags shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
 - D. Nutra-Flo shall monitor and record the operating pressure drop across the baghouse at least once every 24 hours while the plant is operating. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
 - E. Nutra-Flo shall maintain a copy of the baghouse manufacturer's performance warranty on site.
 - F. Nutra-Flo shall maintain an operating and maintenance log for the baghouse which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

2. Control Device Requirement-Scrubber
 - A. Nutra-Flo shall control SO_x and particulate emissions from the three double drum dryers (EP-01) using a cross flow packed scrubber, as specified in the permit application.
 - B. The scrubber shall be operated and maintained in accordance with the manufacturer's specifications. The scrubber shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that Department of Natural Resources' employees may easily observe them.
 - C. Nutra-Flo shall monitor and record the operating pressure drop across the scrubber at least once every 24 hours while the plant is operating. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
 - D. Nutra-Flo shall monitor the liquid flow rate into the scrubber at least once every 24 hours while the plant is operating and maintain a liquid to gas ratio within the manufacturer's specifications.
 - E. Nutra-Flo shall use all scrubbing liquids (NaOH) required by the manufacturer that are necessary to maintain the control efficiencies for SO_x and particulate emissions listed in the permit application.
 - F. Nutra-Flo shall maintain a copy of the scrubber manufacturer's performance warranty on site.
 - G. Nutra-Flo shall maintain an operating and maintenance log for the scrubber which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
3. Control Device Requirement-Biofilter
 - A. Nutra-Flo shall control particulate emissions and odors from the three double drum dryers using a biofilter, as specified in the permit application.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- B. Nutra-Flo shall maintain a proper temperature and moisture content in the biofilter, as well as any other important operational parameters which impact the survival/ growth of the microorganisms and the effectiveness of the filter.
 - C. Nutra-Flo shall maintain an operating and maintenance log for the biofilter which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
4. Record Keeping and Reporting Requirements
- A. Nutra-Flo shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include SDS for all materials used.
 - B. Nutra-Flo shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2014-09-024
Installation ID Number: 217-0051
Permit Number:

Nutra-Flo
3000 Industrial Parkway
Nevada, MO 64772
Vernon County, S27, T36N, R31W

Complete: September 22, 2014

Parent Company:
Nutra-Flo Company, Inc.
216 Cunningham Drive
Sioux City, IA 51106

REVIEW SUMMARY

- Nutra-Flo has applied for authority to install an animal feed ingredient processing plant, which is being relocated to Nevada, Missouri from Sioux City, Iowa.
- HAP emissions are expected from the proposed equipment, but all potential HAP emissions are significantly below de minimis levels and their respective SMALs.
- None of the New Source Performance Standards (NSPS) apply to the installation.
- None of the NESHAPs apply to this installation. None of the currently promulgated MACT regulations apply to the proposed equipment.
- A baghouse, scrubber, and biofilter are being used to control particulate emissions, SO_x, and odors from the equipment in this permit.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are controlled below de minimis levels.
- This installation is located in Vernon County, an attainment area for all criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.
- Emissions testing is not required for the equipment.
- No Operating Permit is required for this installation.
- Approval of this permit is recommended with special conditions.

PROJECT DESCRIPTION

Nutra-Flo is seeking authority to construct a new animal feed ingredient processing plant, which is being relocated to Nevada, Missouri from Sioux City, Iowa. The proposed facility will process condensed porcine solubles (CPS), soy oil, and soy flour to produce dried porcine solubles (DPS). The maximum production rate of the new plant will be 13,632 tons of DPS per year.

The CPS and soy flour will be initially mixed in a 150 gallon agitated mix tank and then dried in three double drum dryers. The dryers will be operated using steam from two 8.4 MMBTU/hr natural gas-fired boilers. Dried product will then be transferred through a conveying system to cooling, storage, and packaging. Soy oil will be added to the conveying system prior to cooling. A maximum of 5% of the final product will be recirculated back to the conveying system. The exhaust from the dryers will be vented through a Verantis HRP cross-flow, packed scrubber, followed by a biofilter for odor control. The entire conveying system and every process downstream from the dryer will be totally enclosed and vented to a baghouse.

No permits have previously been issued to Nutra-Flo from the Air Pollution Control Program.

EMISSIONS/CONTROLS EVALUATION

The emission factors and control efficiencies used in this analysis were obtained from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, Fifth Edition (AP-42).

Conveying, storage, and bagging (classified as shipping) emission factors for PM, PM₁₀, and PM_{2.5} were obtained from AP-42 Section 9.9.1 *Grain Elevators & Processes*, May 2003. A capture efficiency of 100% was used because all processes are completely enclosed and vented to a baghouse. Potential emissions for the baghouse were calculated using manufacturer's specifications and outlet loading values for grain.

Combustion emissions from the natural gas-fired boilers were taken from AP-42 Section 1.4 *Natural Gas Combustion*, July 1998. Exhaust emissions from the drum dryers were developed from stack test data taken from the same equipment at the Sioux City, Iowa facility. Particle size distributions were based on AP-42 Appendix B.1, Section 9.9.4 *Alfalfa Dehydrating*, September 1996. The dryers vent their exhaust to a scrubber followed by a biofilter, with an overall control efficiency of 98% for SO_x and 62% for particulate matter. The biofilter also destroys the odor from the exhaust. The Verantis HRP cross-flow, packed scrubber was tested by Pace Analytical Services, Inc. on October 4-5, 2011 to verify control efficiencies listed in the manufacturer's technical bulletin. The biofilter is a custom design based on *Field Tests of Biofilters in Reducing Aerial Pollutant Emissions from Commercial Finishing Barn*, 2011. Control efficiencies are based on the efficiency equations listed in the document.

Emissions from haul roads were calculated using the predictive equation from AP-42 Section 13.2.2 *Unpaved Roads*, November 2006.

The following table provides an emissions summary for this project. This is a new facility, so there are no existing potential emissions or existing actual emissions. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8,760 hours per year) and not considering control mechanisms. The controlled potential emissions were calculated using control devices and applicable special conditions.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels / SMAL	Existing Potential Emissions	Existing Actual Emissions	Potential Emissions of the Application	New Installation Controlled Potential
PM	25.0	N/A	N/A	194.62	16.25
PM ₁₀	15.0	N/A	N/A	173.81	13.52
PM _{2.5}	10.0	N/A	N/A	136.60	9.18
SO _x	40.0	N/A	N/A	17.93	0.40
NO _x	40.0	N/A	N/A	7.21	N/A
VOC	40.0	N/A	N/A	2.59	N/A
CO	100.0	N/A	N/A	6.06	N/A
Combined HAPs	25.0	N/A	N/A	0.61	N/A

N/A = Not Applicable

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of all pollutants are controlled below de minimis levels.

APPLICABLE REQUIREMENTS

Nutra-Flo shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Ryan Schott
New Source Review Unit

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated September 9, 2014, received September 11, 2014, designating Nutra-Flo Company, Inc. as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- *Standard and Custom Designed Cross-flow Packed Scrubbers (HRP Series)*, Verantis Environmental Solutions Group.
- T.T. Lim, Yaomin Jin, J-Q. Ni, and A.J. Heber; *Field Tests of Biofilters in Reducing Aerial Pollutant Emissions from Commercial Finishing Barn*, 2011.

APPENDIX A

Abbreviations and Acronyms

%percent	m/s meters per second
°Fdegrees Fahrenheit	Mgal 1,000 gallons
acfmactual cubic feet per minute	MW megawatt
BACT Best Available Control Technology	MHDR maximum hourly design rate
BMPs Best Management Practices	MMBtu Million British thermal units
Btu British thermal unit	MMCF million cubic feet
CAM Compliance Assurance Monitoring	MSDS Material Safety Data Sheet
CAS Chemical Abstracts Service	NAAQS ... National Ambient Air Quality Standards
CEMS Continuous Emission Monitor System	NESHAPs National Emissions Standards for Hazardous Air Pollutants
CFR Code of Federal Regulations	NO_x nitrogen oxides
CO carbon monoxide	NSPS New Source Performance Standards
CO₂ carbon dioxide	NSR New Source Review
CO₂e carbon dioxide equivalent	PM particulate matter
COMS Continuous Opacity Monitoring System	PM_{2.5} particulate matter less than 2.5 microns in aerodynamic diameter
CSR Code of State Regulations	PM₁₀ particulate matter less than 10 microns in aerodynamic diameter
dscf dry standard cubic feet	ppm parts per million
EQ Emission Inventory Questionnaire	PSD Prevention of Significant Deterioration
EP Emission Point	PTE potential to emit
EPA Environmental Protection Agency	RACT Reasonable Available Control Technology
EU Emission Unit	RAL Risk Assessment Level
fps feet per second	SCC Source Classification Code
ft feet	scfm standard cubic feet per minute
GACT Generally Available Control Technology	SDS Safety Data Sheet
GHG Greenhouse Gas	SIC Standard Industrial Classification
gpm gallons per minute	SIP State Implementation Plan
gr grains	SMAL Screening Model Action Levels
GWP Global Warming Potential	SO_x sulfur oxides
HAP Hazardous Air Pollutant	SO₂ sulfur dioxide
hr hour	tph tons per hour
hp horsepower	tpy tons per year
lb pound	VMT vehicle miles traveled
lbs/hr pounds per hour	VOC Volatile Organic Compound
MACT Maximum Achievable Control Technology	
µg/m³micrograms per cubic meter	

Mr. Dan Scannell
Vice President, Custom Drying Solutions
Nutra-Flo
3000 Industrial Parkway
Nevada, MO 64772

RE: New Source Review Permit - Project Number: 2014-09-024

Dear Mr. Scannell:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions and your new source review permit application is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 of RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, Truman State Office Building, Room 640, 301 W. High Street, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.oa.mo.gov/ahc. If you have any questions regarding this permit, please do not hesitate to contact Ryan Schott, at the Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:rsf

Enclosures

c: Southwest Regional Office
PAMS File: 2014-09-024
Permit Number:.