STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law,

Permit No.	MO-0123552
Owner:	Ajinomoto Windsor Inc.
Address:	4200 Concours Street, Suite #100, Ontario, CA 91764-4982
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Ajinomoto Windsor, Inc. Wastewater Treatment Plant
Facility Address:	#3 Industrial Dr., Piedmont, MO 63957
Legal Description:	See Page 2 - 3
UTM Coordinates:	See Page 2 - 3
Receiving Stream:	See Page 2 - 3
First Classified Stream and ID:	See Page 2 - 3
USGS Basin & Sub-watershed No.:	See Page 2 - 3

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

No discharge of process wastewater or sludge.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

March 1, 2017
Effective Date

Steven Feeler, Acting Director, Division of Environmental Quality

December 31, 2019
Expiration Date

David J. Lamb, Acting Director, Water Protection Program

FACILITY DESCRIPTION (continued)

This facility manufactures breaded and battered food products. No discharge of process wastewater or sludge. Wastewater is pretreated by dissolved air flotation (DAF) and is discharged to the City of Piedmont's Wastewater Treatment Facility (MO0047341). Sludge is removed contract hauler and land applied on property not owned, rented, or leased by the facility.

Permitted Feature #001 – Outfall #001 – Sludge from DAF stored in two steel tanks – SIC #2038
Legal Description: SE ¼, SW ¼, Sec. 3, T28N, R3E, Wayne County
UTM Coordinates: X = 703192, Y = 4110997
Receiving Stream: Tributary to McKenzie Creek
First Classified Stream and ID: McKenzie Creek (P) (2786) 303(d) List
USGS Basin & Sub-watershed No.: 11010007-0601

Design flow: 1,095,500 gallons per year.
Average flow: 2,940 gallons per day.
Average sludge production: 539 dry tons/year.
Storage Capacity: 38,000 gallons.

Sludge Land Application:
Application areas: 369.5 acres total available
Application rates: Plant Available Nitrogen (PAN)
Field slopes: less than 10 percent
Equipment type: tank truck
Vegetation: row crop and grass

Permitted Feature #002 – Land application and stormwater monitoring from Hawkins field 1. Hawkins fields 1 – 4 115 acres.
Legal Description: SW ¼, NW ¼, Sec. 19, T29N, R5E, Wayne County
UTM Coordinates: X = 717373, Y = 4117129
Receiving Stream: Rings Creek (P) (2939)
First Classified Stream and ID: Rings Creek (P) (2939)
USGS Basin & Sub-watershed No.: 08020202-0501

Permitted Feature #003 – Land application and stormwater monitoring from Hawkins field 2.
Legal Description: SW ¼, NE ¼, Sec 19, T29N, R5E, Wayne County
UTM Coordinates: X = 718333, Y = 4117013
Receiving Stream: Rings Creek (P) (2939)
First Classified Stream and ID: Rings Creek (P) (2939)
USGS Basin & Sub-watershed No.: 08020202-0501

Permitted Feature #004 – Land application and stormwater monitoring from Hawkins field 3.
Legal Description: SE ¼, NW ¼, Sec 19, T29N, R5E, Wayne County
UTM Coordinates: X = 717818, Y = 4117262
Receiving Stream: Rings Creek (P) (2939)
First Classified Stream and ID: Rings Creek (P) (2939)
USGS Basin & Sub-watershed No.: 08020202-0501

Permitted Feature #005 – Land application and stormwater monitoring from Hawkins field 4.
Legal Description: SE ¼, NW ¼, Sec 19, T29N, R5E, Wayne County
UTM Coordinates: X = 717905, Y = 4117102
Receiving Stream: Rings Creek (P) (2939)
First Classified Stream and ID: Rings Creek (P) (2939)
USGS Basin & Sub-watershed No.: 08020202-0501

Permitted Feature #006 – Land application and stormwater monitoring from Sutton property. 38 acres
Legal Description: SW ¼, SW ¼, Sec 29, T30N, R3E, Reynolds County
UTM Coordinates: X = 699409, Y = 4124288
Receiving Stream: Tributary to Black River
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.: 11010007-0505

Permitted Feature #007 – Deleted – No longer used for land application

Permitted Feature #008 – Deleted – No longer used for land application

Permitted Feature #009 – Land application and stormwater monitoring from Hill property. 27 acres
Legal Description: SE ¼, Sec 18, T28N, R5E, Wayne County
UTM Coordinates: X = 718520, Y = 4107966
Receiving Stream: Big Lake Creek (C) (2946)
First Classified Stream and ID: Big Lake Creek (C) (2946)
USGS Basin & Sub-watershed No.: 08020202-0503

Permitted Feature #010 – Land application and stormwater monitoring from Smith property. 60 acres.
Legal Description: E ½, Sec 36, T29N, R4E, Wayne County
UTM Coordinates: X = 716095, Y = 4113027
Receiving Stream: Tributary to Big Lake Creek
First Classified Stream and ID: Big Lake Creek (C) (2946)
USGS Basin & Sub-watershed No.: 08020202-0503

Permitted Feature #011 – Land application and stormwater monitoring from Rose fields 1, 2, and 3. 50.5 acres
Legal Description: NE ¼, Sec 9, T28N, R5E, Wayne County
UTM Coordinates: X = 720294, Y = 4110687
Receiving Stream: Wet Fork (C) (2945)
First Classified Stream and ID: Wet Fork (C) (2945)
USGS Basin & Sub-watershed No.: 08020202-0503

Permitted Feature #012 – Land application and stormwater monitoring from Rose fields 4 and 5. 79 acres.
Legal Description: NE ¼, Sec 9, T28N, R5E, Wayne County
UTM Coordinates: X = 720932, Y = 4110736
Receiving Stream: Tributary to Wet Fork
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.: 08020202-0503

Stream Monitoring # S01: Rings Creek at CR 383
Legal Description: SW ¼, NE ¼, Sec. 19, T29N, R5E, Wayne County
UTM Coordinates: X = 718516, Y = 4117330

Stream Monitoring # S02: 8-20-13 MUDD V1.0 (McMillan Hollow) at CC
Legal Description: SW ¼, SW ¼, Sec. 29, T30N, R3E, Reynolds County
UTM Coordinates: X = 699232, Y = 4124357

Stream Monitoring # S03: Deleted – Sulphur Creek at C

Stream Monitoring # S04: Big Lake Creek at CR 378
Legal Description: NE ¼, NW ¼, Sec. 9, T28N, R5E, Wayne County
UTM Coordinates: X = 721215, Y = 4110778

Stream Monitoring # S05: Big Lake Creek at CR 372
Legal Description: NE ¼, NE ¼, Sec. 19, T28N, R5E, Wayne County
UTM Coordinates: X = 718640, Y = 4107547

Stream Monitoring # S06: Big Lake Creek at CR 361
Legal Description: NE ¼, NW ¼, Sec 1, T28N, R4E, Wayne County
UTM Coordinates: X =716115, Y = 4112399

PERMITTED FEATURE #001	TABLE A-1. LAND APPLICATION SYSTEM LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to conduct land application of wastewater as specified in the application for this permit. The final limitations shall become effective upon issuance and remain in effect until expiration of the permit. The land application of wastewater shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	FINAL LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Sludge Land Applied (See Note 1, Page 7)						
pH	SU	*			once/quarter*****	grab
Total Kjeldahl Nitrogen as N	mg/kg	*			once/quarter*****	grab
Ammonia Nitrogen as N	mg/kg	*			once/quarter*****	grab
Nitrate Nitrogen as N	mg/kg	*			once/quarter*****	grab
Total Phosphorus as P	mg/kg	*			once/quarter*****	grab
Percent Solids	percent	*			once/quarter*****	grab
Chlorides	mg/kg	*			once/quarter*****	grab
Sodium Adsorption Ratio (SAR)	ratio	*			once/quarter*****	grab
Arsenic	mg/kg****	*			once/year	grab
Cadmium	mg/kg****	*			once/year	grab
Copper	mg/kg****	*			once/year	grab
Lead	mg/kg****	*			once/year	grab
Mercury	mg/kg****	*			once/year	grab
Molybdenum	mg/kg****	*			once/year	grab
Nickel	mg/kg****	*			once/year	grab
Selenium	mg/kg****	*			once/year	grab
Zinc	mg/kg****	*			once/year	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JULY 28, 2017.

PERMITTED FEATURE #002-#012	TABLE A-2. LAND APPLICATION SYSTEM LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to conduct land application of wastewater as specified in the application for this permit. The final limitations shall become effective upon issuance and remain in effect until expiration of the permit. The land application of wastewater shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	FINAL LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Stormwater Runoff from Land Application Fields (Note 2, Page 7)						
Total Boron	mg/L	*			monthly**	grab
Chemical Oxygen Demand	mg/L	120			monthly**	grab
Chlorides	mg/L	230			monthly**	grab
E. Coli	#/100mL	*			monthly**	grab
Flow	MGD	*			monthly**	estimate
Nitrite plus Nitrate as N	mg/L	3.0			monthly**	grab
Ammonia Nitrogen as N	mg/L	2.0			monthly**	grab
Total Kjeldahl Nitrogen as N	mg/L	*			monthly**	grab
Oil and Grease	mg/L	10			monthly**	grab
pH – Units	SU	***			monthly**	grab
Total Phosphorus as P	mg/L	*			monthly**	grab
Total Suspended Solids	mg/L	100			monthly**	grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE APRIL 28, 2017.

PERMITTED FEATURE #002-#012	**TABLE A-3.** LAND APPLICATION LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to conduct land application of wastewater as specified in the application for this permit. The final limitations shall become effective upon issuance and remain in effect until expiration of the permit. The land application of wastewater shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	**FINAL LIMITATIONS**			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Land Application Operational Monitoring						
Volume Applied	Gallons	*			daily	total
Application Area	Acres	*			daily	total
Application Rate	Gallons/acre	*			daily	total
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE APRIL 28, 2017.						
Soil Monitoring (See Note 3, Page 6)						
pH – Units	SU	*			once/5 years	composite
Ammonia s N	mg/kg	*			once/5 years	composite
Nitrate Nitrogen as N	mg/kg	*			once/5 years	composite
Available Phosphorus as P (Bray P-1 Method)	mg/kg	*			once/5 years	composite
Total Sodium	mg/kg	*			once/5 years	composite
Exchangeable Sodium	%	*			once/5 years	composite
MONITORING REPORTS SHALL BE SUBMITTED WITH THE ANNUAL REPORT; THE FIRST REPORT IS DUE JANUARY 28, 2018.						

PERMITTED FEATURE #S01, #S02, #S04 - #S06	**TABLE A-4.** IRRIGATION SYSTEM LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to conduct land application of wastewater as specified in the application for this permit. The final limitations shall become effective upon issuance and remain in effect until expiration of the permit. The land application of wastewater shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	**FINAL LIMITATIONS**			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Stream Monitoring (See Note 4, Page 6)						
Dissolved Oxygen	mg/L	*			monthly**	grab
Nitrate nitrogen as N	mg/L	*			monthly**	grab
Ammonia nitrogen as N	mg/L	*			monthly**	grab
pH	SU	*			monthly**	grab
Dissolved Phosphorus as P	mg/L	*			monthly**	grab
Total Suspended Solids	mg/L	*			monthly**	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE APRIL 28, 2017.						

* Monitoring requirement only

** Stormwater runoff and in stream sampling shall be conducted the month prior to sludge application at a given site and shall be conducted for at least three (3) months following sludge application at a given site. If sludge has not been applied or planned to be applied report as “Sampling Not Required”. If no discharge occurred, report as “No Discharge”.

*** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.5-9.0 pH units.

**** Dry weight basis. Monitoring is for ceiling concentrations for land application.

***** See table below for quarterly sampling.

Minimum Sampling Requirements			
Quarter	**Months**	**Parameters**	**Report is Due**
First	January, February, March	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

Note 1 – Sludge that is applied shall be sampled at the storage tank or application vehicle. If no land application occurred during the report period, report as "No Application."

Note 2 – All samples shall be collected from a discharge resulting from a precipitation event greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable precipitation event. If a discharge does not occur within the reporting period, report as no discharge. The total amount of precipitation should be noted from the event from which the samples were collected.

Note 3 – Sample the upper 6 to 8 inches of soil. Composite samples shall be collected from each permitted land application site. See Special Condition 16f. for additional guidance.

Note 4 – When conducting in-stream monitoring, the permittee shall record observations that include: the time of day, weather conditions, unusual stream/lake characteristics (e.g., septic conditions, algae growth, etc.), the stream segment (e.g., riffle, pool or run) or the lake depth from where the sample was collected. These observations shall be submitted with the sample results. Samples shall not be collected from areas with especially turbulent flow, still water or from the stream bank, unless these conditions are representative of the stream reach or no other areas are available for sample collection. The sampling event should rescheduled if turbidity in the stream increases notably; or if rainfall over the past two weeks exceeds 2.5 inches or exceeds 1 inch in the last 24 hours

B. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Part I and Part III standard conditions dated August 1, 2014 and March 1, 2015, respectively, and hereby incorporated as though fully set forth herein.

C. SPECIAL CONDITIONS

1. Emergency and Unauthorized Discharge. Wastewater/sludge shall be stored and land applied during suitable conditions so that there is no discharge from the storage structure(s) or land application site. An emergency discharge from wastewater or sludge storage structure(s) may only occur if rainfall exceeds the 1 in 10 year (Data taken from the Missouri Climate Atlas) or the 24 hour, 25 year (Data taken from NRCS Urban Hydrology for Small Watersheds) rainfall events. **Discharge for any other reason or from land application sites shall constitute a permit violation and shall be reported in accordance with Standard Conditions, Part 1, Section B.2.b.** Monitoring shall take place once per day while discharging. Test results are due on the 28th day of the following month after the cessation of the discharge. Permittee shall monitor for the following constituents:

Constituent	**Units**
Flow	MGD
Biochemical Oxygen Demand$_5$	mg/L
Total Suspended Solids	mg/L
Ammonia as N	mg/L
pH – Units	SU
Oil & Grease	mg/L

2. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   a. Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   b. Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.

SPECIAL CONDITIONS (continued)

c. Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

d. Incorporate the requirement to develop a pretreatment program pursuant to 40 CFR 403.8(a) when the Director of the Water Protection Program determines that a pretreatment program is necessary due to any new introduction of pollutants into the Publically Owned Treatment Works or any substantial change in the volume or character of pollutants being introduced.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

3. Changes in Discharges of Toxic Pollutant
In addition to the reporting requirements under §122.41(1), all existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:
   a. That an activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:
      (1) One hundred micrograms per liter (100 µg/L);
      (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile;
      (3) Five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol;
      (4) One milligram per liter (1 mg/L) for antimony;
      (5) Five (5) times the maximum concentration value reported for the pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or
      (6) The notification level established by the department in accordance with 40 CFR 122.44(f).
   b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
      (1) Five hundred micrograms per liter (500 µg/l);
      (2) One milligram per liter (1 mg/l) for antimony;
      (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with §122.21(g)(7).
      (4) The level established by the Director in accordance with §122.44(f).

4. All permitted features s must be clearly marked in the field.

5. Water Quality Standards
   a. To the extent required by law, discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
   b. General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
      (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
      (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
      (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
      (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
      (5) There shall be no significant human health hazard from incidental contact with the water;
      (6) There shall be no acute toxicity to livestock or wildlife watering;
      (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
      (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

6. Public access to storage areas and land application sites must be controlled by either positive barriers or remoteness of site.

SPECIAL CONDITIONS (continued)

7. Electronic Discharge Monitoring Report (eDMR) Submission System.
   a. Discharge Monitoring Reporting Requirements. The permittee must electronically submit compliance monitoring data via the eDMR system. In regards to Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit.
   b. Programmatic Reporting Requirements. The following reports (if required by this permit) must be electronically submitted as an attachment to the eDMR system until such a time when the current or a new system is available to allow direct input of the data:
      (1) Collection System Maintenance Annual Reports;
      (2) Wastewater Irrigation Annual Reports;
      (3) Sludge/Biosolids Annual Reports;
      (4) Any additional report required by the permit excluding bypass reporting.
      (5) After such a system has been made available by the department, required data shall be directly input into the system by the next report due date.
   c. Other actions. The following shall be submitted electronically after such a system has been made available by the department:
      (1) General Permit Applications/Notices of Intent to discharge (NOIs);
      (2) Notices of Termination (NOTs);
      (3) No Exposure Certifications (NOEs);
      (4) Low Erosivity Waivers and Other Waivers from Stormwater Controls (LEWs); and
      (5) Bypass reporting, See Special Condition #XX for 24-hr. bypass reporting requirements.
   d. Electronic Submissions. To access the eDMR system, use the following link in your web browser: https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx .
   e. Waivers from Electronic Reporting. The permittee must electronically submit compliance monitoring data and reports unless a waiver is granted by the department in compliance with 40 CFR Part 127. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: http://dnr.mo.gov/forms/780-2692-f.pdf . The department will either approve or deny this electronic reporting waiver request within 120 calendar days. Only permittees with an approved waiver request may submit monitoring data and reports on paper to the Department for the period that the approved electronic reporting waiver is effective.

8. Reporting of Non-Detects:
   a. An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
   b. The permittee shall not report a sample result as "Non-Detect" without also reporting the detection limit of the test. Reporting as "Non-Detect" without also including the detection limit will be considered failure to report, which is a violation of this permit.
   c. The permittee shall report the "Non-Detect" result using the less than sign and the minimum detection limit (e.g. <10).
   d. Where the permit contains a Minimum Level (ML) and the permittee is granted authority in the permit to report zero in lieu of the < ML for a specified parameter (conventional, priority pollutants, metals, etc.), then zero (0) is to be reported for that parameter.
   e. See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
   f. When calculating monthly averages, one-half of the minimum detection limit (MDL) should be used instead of a zero. Where all data are below the MDL, the "<MDL" shall be reported as indicated in item (C).

9. The permittee shall develop, maintain and implement an Operation and Maintenance (O&M) Manual that includes all necessary items to ensure the operation and integrity of the waste handling and land application systems, including key operating procedures, an aerial or topographic site map with the permitted features, land application fields, and irrigation buffer zones marked, and a brief summary of the operation of the facility. The O&M manual shall be made available to the operator and available to the department upon request. The O&M Manual shall be reviewed and updated at least every five years.

10. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

11. Hazardous waste regulated under the Missouri Hazardous Waste Law and regulations shall not be land applied under this permit.

12. All paint, solvents, petroleum products and petroleum waste products (except fuels), and storage containers (such as drums, cans, or cartons) shall be stored so that these materials are not exposed to stormwater. Spill prevention, control, and/or management shall be provided sufficient to prevent any spills of these pollutants from entering a water of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall also prevent the contamination of groundwater.

SPECIAL CONDITIONS (continued)

13. Good housekeeping practices shall be maintained on the site to keep solid waste from entry into waters of the state.

14. Any pesticide discharge from any point source shall comply with the requirements of Federal Insecticide, Fungicide and Rodenticide Act, as amended (7 U.S.C. 136 et. seq.) and the use of such pesticides shall be in a manner consistent with its label.

15. Before releasing water that has accumulated in secondary containment areas it must be examined for hydrocarbon odor and presence of a sheen. If the presence of hydrocarbons is indicated, this water must be tested for Total Petroleum Hydrocarbons (TPH). The suggested analytical method for testing TPH is non-Halogenated Organic by Gas Chromatography method 8015 (also known as OA1 and OA2). However, if the permittee so desires to use other approved testing methods (i.e. EPA 1664), they may do so. If the concentration for TPH exceeds 10mg/L, the water shall be taken to a WWTP for treatment.

16. Release of a hazardous substance must be reported to the department in accordance with 10 CSR 24-3.010. A record of each reportable spill shall be retained with the O&M and made available to the department upon request.

17. Land Application System.

    a. This special condition does not apply to fertilizer products that are exempted under the Missouri Clean Water Law and regulations, 10 CSR 20-6.015(3)(B)8.
    b. Permitted Sites. This permit authorizes land application of sludge by the permittee to those sites listed in the "Facility Description" of this permit. Land application of sludge by a contract hauler to sites owned, rented, or leased by the permittee must also be listed in the "Facility Description" unless, the contract hauler is permitted. Land applications by a permitted contract hauler to sites that are not owned, rented, or leased by the permittee are not required to be listed in this permit. Only those pollutants listed in the permit application may be land applied. Permittee requests for additional sites must follow permit modification procedures prior to land application.
    c. Records of the amount and application rate of wastewater or sludge from other sources must be kept.
    d. Tanks shall be inspected monthly for structural integrity and leaks.
    e. Public Access Restrictions. This permit does not authorize application of sludge to public use areas.
    f. Soil Monitoring.
        (1) Composite soil samples shall be collected every five years from each field listed in this permit where land application has or will occur prior to the expiration date of this permit. No land application shall occur on fields listed in this permit if soil test results are more the five (5) years old.
        (2) Soil sampling shall be in accordance with University of Missouri (MU) Extension Guides G9215, Soil Sampling Pastures or G9217, Soil Sampling Hayfields and Row Crops or other methods approved by the department. The recommendation of one composite sample per 20 acres in G9215 and G9217 is not required by this permit, however, this is a useful method to identify soil fertility fluctuations in large fields due to past management practices, soil type, and variability of crop yields. There shall be at least one composite sample per 80 acres.
        (3) Testing shall conform to Recommended Chemical Soil Testing Procedures for North Central Region (North Central Regional Research Publication 221 Revised), or Soil Testing in Missouri (MU Extension Guide EC923), or other methods approved by the department.

18. Land Application Requirements.

    a. Sludge land applications shall not exceed agronomic rates to ensure agricultural use of nutrients and prevent contamination of surface and groundwater. The agronomic rate is the amount of sludge applied to a field to meet the fertilizer recommendation.
    b. No land application shall occur when the soil is frozen, snow covered, or saturated. There shall be no application during a precipitation event or if a precipitation event that is likely to create runoff is forecasted to occur within 24 hours of a planned application.
    c. Land application shall occur only during daylight hours.
    d. Land application fields listed in the "Facility Description" shall be checked daily during land application for runoff. Sites that utilize spray irrigation shall monitor for the drifting of spray across property lines.
    e. Setback distances from sensitive features. There shall be no land application within:
        (1) 300 feet of any well, sinkhole, losing stream, wetland, or cave entrance, water supply impoundment or stream intake;
        (2) 150 feet of an occupied residence, public building, or public use area;
        (3) 50 feet of gaining perennial or intermittent stream, public or privately owned pond or lake;
        (4) 50 feet of property line or public road.

SPECIAL CONDITIONS (continued)

f. Sludge application slope limitations for application sites are as follows;
   (1) Slopes of 6 percent or less there are no limitations.
   (2) Slopes of 7 to 12 percent, biosolids when may be applied with no limitation when soil conservation practices are used to meet the minimum erosion levels.
   (3) Slopes greater than 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less

g. Grazing of animals and harvesting of forage crops deferments following wastewater irrigation or sludge application shall be as follows:
   (1) During the period May 1 to October 30 the minimum deferment shall be fourteen (14) days,
   (2) During the period November 1 to April 30, the minimum deferment shall be thirty (30) days,
   (3) Grazing of dairy animals shall follow the recommendations of the State Milk Board. A much longer deferment period is recommended for lactating dairy animals.

h. Sludge should not be applied to fields used to grow food crops for human consumption to be eaten raw, such as leafed vegetables or root crops.

i. Land application equipment owned or operated by the facility shall be visually inspected daily during land application to check for equipment malfunctions and leaks. The application system shall be operated so as to provide uniform distribution of wastes over the entire land application site and shall be capable of applying the annual design flow during an application period of less than 100 days or 800 hours per year. Land application equipment shall be calibrated at least once annually.

19. Nutrient Management Plant Available Nitrogen (PAN) Method

Land application to fields listed in the "Facility Description" in this permit shall use the following protocols to determine the amount of sludge to be applied.

a. The fertilizer recommendation shall be based on the following:
   (1) The nutrient recommendation (nitrogen or phosphorus) for each crop. Recommendations can be found in University of Missouri Extension Guide WQ430 Crop/Nutrient Considerations for Biosolids or from publications by other land grant universities in adjoining states,
   (2) Realistic yield goal for each crop. Yield goals should be based on actual crop yield records from multiple years for each field. Good judgment should be used to counteract unusually high or low yields. If a field's yield history is not available the USDA county wide average or other approved source may be used, and
   (3) The most recent soil test.

b. Sludge applications using thee PAN method shall be conducted according to the following practices.
   (1) Nitrogen based application. The amount of sludge to be applied shall be adjusted annually based on the PAN calculation using the current sludge nutrient analysis and the following:
      (a) For non-legume crops, the nitrogen fertilizer recommendation shall be adjusted to account for nitrogen credits from a preceding legume crop and residual nitrogen from the previous year's application. Nitrogen removal rates can be found in WQ430.
      (b) For legume crops, the nitrogen removal capacity of the legume crops should be based on the estimated nitrogen content of the harvested crop as defined in WQ430 and a realistic yield goal. The estimated nitrogen content of the crop must be adjusted using nitrogen credits for residual nitrogen fertilizer from the previous year's application.

      PAN = [Ammonia Nitrogen x volatilization factor*] + [Organic Nitrogen x 0.2] + [Nitrate Nitrogen]
      *Volatilization factor is 0.7 for surface application and 1 for subsurface application.

c. Other Pollutant Limitations and Loading Rates
   (1) Oil and grease application shall not exceed 10,000 pounds oil/acre/year for subsurface injection or soil incorporation. For surface application to growing vegetation, the sludge shall not exceed 15% oil & grease content and shall not exceed 5,000 pounds oil/acre. Avoid heavy application of oil and grease within 30 days before planting of row crops.

20. Record Keeping

a. A daily land application log shall be prepared and kept on file at the permittee office location for each application site showing dates of application, weather condition (sunny, overcast, raining, below freezing etc…), soil moisture condition, application method.

b. A record of monthly visual storage structure inspections shall be maintained.

SPECIAL CONDITIONS (continued)

c. A record of land application equipment inspections and calibrations as well as land application field inspections shall be maintained.
d. A record of all PAN calculations.
e. All records and monitoring results shall be maintained for at least five years and shall be made available to the department upon request.

21. Annual Report on Operation and Land Application.

An annual report is required in addition to other reporting requirements under Section A of this permit. The annual report shall be submitted by January 28 of each year. The report shall include, but is not limited to, a summary of the following:

a. Record of maintenance and repairs during the year, average number of times per month the facility is checked to see if it is operating properly, and description of any unusual operating conditions encountered during the year.
b. The number of days the storage structure discharged during the year, the discharge flow, reason the discharge occurred and effluent analysis performed.
c. A summary for each field used for land application showing number of acres used number of days application occurred, crop grown and yield, and total amount of sludge applied (gal. or tons/acre).
d. Any soil tests taken during the reporting period.
e. For fields where the total nitrogen application exceeds 150 lbs./acre, submit PAN calculations to document that the applied nitrogen will be utilized.
f. Narrative summary of any problems or deficiencies identified, corrective action taken and improvements planned.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO-0123552
AJINOMOTO WINDSOR, INC. WASTEWATER TREATMENT PLANT

Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified. After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

A Factsheet is not an enforceable part of an operating permit.

This Factsheet is for Industrial Land Application

Part I – Facility Information

Facility Type: Industrial no-discharge with sludge removed and land applied by contract hauler – SIC #2038

Facility Description:
This facility manufactures breaded and battered food products. No discharge of process wastewater or sludge. Wastewater is receives pretreatment by dissolved air flotation (DAF) and is discharged to the City of Piedmont's Wastewater Treatment Facility (MO0047341). Sludge is removed contract hauler and land applied on property not owned, rented, or leased by the facility.

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?

- ✓ No.

Application Date: 01/12/2016
Expiration Date: 07/11/2016

PERMITTED FEATURE(S) TABLE:

PERMITTED FEATURE	TREATMENT LEVEL	EFFLUENT TYPE
#001-012	Land Application	Industrial sludge
#S01-#S06	None	In stream monitoring

Facility Performance History:
This facility was last inspected on January 18, 2013, and was found to be non-compliance not meeting effluent limits.

Part II – Receiving Stream Information

Receiving Water Body's Water Quality
10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1st classified receiving stream's beneficial water uses to be maintained are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(4)].

RECEIVING STREAM(S) TABLE:

WATERBODY NAME	CLASS	WBID	DESIGNATED USES	DISTANCE TO CLASSIFIED SEGMENT	12-DIGIT HUC
Tributary to McKenzie Creek	n/a	n/a	General Criteria		11010007-0601
McKenzie Creek	P	2786	AQL, IRR, LWW, SCR, WBCB, HHP		
Rings Creek	P	2939	AQL, IRR, LWW, SCR, WBCA, HHP		08020202-0501
Tributary to Black River	n/a	n/a	General Criteria		11010007-0505
8-20-13 MUDD V1.0	C	3960	AQL, IRR, LWW, SCR, WBCB, HHP		
Big Lake Creek	C	2946	AQL, IRR, LWW, SCR, WBCB, HHP		08020202-0503
Tributary to Big Lake Creek	n/a	n/a	General Criteria		
Wet Fork (C) (2945	C	2945	AQL, IRR, LWW, SCR, WBCB, HHP		
8-20-13 MUDD V1.0	C	3960	AQL, IRR, LWW, SCR, WBCB, HHP		

n/a not applicable
WBID Waterbody ID: Missouri Use Designation Dataset 8-20-13 MUDD V1.0 data can be found as an ArcGIS shapefile on MSDIS at ftp://msdis.missouri.edu/pub/Inland_Water_Resources/MO_2014_WQS_Stream_Classifications_and_Use_shp.zip
* As per 10 CSR 20-7.031 Missouri Water Quality Standards, the department defines the Clean Water Commission's water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and 1st classified receiving stream's beneficial water uses to be maintained are in the receiving stream table in accordance with [10 CSR 20-7.031(1)(C)].

Uses which may be found in the receiving streams table, above:
10 CSR 20-7.031(1)(C)1.:
AQL = Protection of aquatic life (Current narrative use(s) are defined to ensure the protection and propagation of fish shellfish and wildlife, which is further subcategorized as: WWH = Warm Water Habitat; CLH = Cool Water Habitat; CDH = Cold Water Habitat; EAH = Ephemeral Aquatic Habitat; MAH = Modified Aquatic Habitat; LAH = Limited Aquatic Habitat. This permit uses AQL effluent limitations in 10 CSR 20-7.031 Table A for all habitat designations unless otherwise specified.)
10 CSR 20-7.031(1)(C)2.: Recreation in and on the water
WBC = Whole Body Contact recreation where the entire body is capable of being submerged;
WBC-A = Whole body contact recreation that supports swimming uses and has public access;
WBC-B = Whole body contact recreation that supports swimming;
SCR = Secondary Contact Recreation (like fishing, wading, and boating).
10 CSR 20-7.031(1)(C)3. to 7.:
HHP (formerly HHF) = Human Health Protection as it relates to the consumption of fish;
IRR = Irrigation for use on crops utilized for human or livestock consumption;
LWW = Livestock and wildlife watering (Current narrative use is defined as LWP = Livestock and Wildlife Protection);
DWS = Drinking Water Supply;
IND = Industrial water supply
10 CSR 20-7.031(1)(C)8-11.: Wetlands (10 CSR 20-7.031 Table A currently does not have corresponding habitat use criteria for these defined uses)
WSA = Storm- and flood-water storage and attenuation; WHP = Habitat for resident and migratory wildlife species;
WRC = Recreational, cultural, educational, scientific, and natural aesthetic values and uses; WHC = Hydrologic cycle maintenance.
10 CSR 20-7.031(6): GRW = Groundwater

303(d) List:
Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.
Applicable;

- ✓ Applicable; Permitted Feature #001 is associated with McKenzie Creek which is listed on the 2004-2006 Missouri 303(d) List for low dissolved oxygen.

- ✓ Applicable; This facility is considered to be a source of or has the potential to contribute to the above listed pollutant(s) from the Permit-In-Lieu of TMDL for McKenzie Creek, February 2, 2009:

Total Maximum Daily Load (TMDL):
A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected; hence, the purpose of a TMDL is to determine the pollutant loading a specific waterbody can assimilate without exceeding water quality standards. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation.

- ✓ Applicable; Permitted Feature #001 is associated with the 2009 McKenzie Creek Permit-In-Lieu of TMDL for McKenzie Creek for low dissolved oxygen.

- ✓ Applicable; This facility is considered to be a source of or has the potential to contribute to the above listed pollutant(s) from the Permit-In-Lieu of TMDL for McKenzie Creek, February 2, 2009.

Ajinomoto Windsor, Inc. Wastewater Treatment Plant has discharged high BOD concentrations to the Piedmont WWTF (historically from 936 to 8110 mg/L). In the Piedmont WWTF permit (MO0047341), this discharge is treated as a separate outfall (#002) and the facility must meet city-mandated limits.

Part III – Rationale and Derivation of Effluent Limitations & Permit Conditions

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:
As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

- ✓ Not Applicable; The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(36)] & [10 CSR 20-7.031(1)(N)], or is an existing facility.

ANTI-BACKSLIDING:
A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(c); 40 CFR Part 122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

- ✓ The Department determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b). The sludge monitoring effluent limitation for chlorides and sodium adsorption ratio were changed to monitoring only. The DAF sludge is land applied at agronomic rates and not discharged. Chloride effluent limit will remain in effect for stormwater monitoring and sodium will continue to be monitored in the soil. The wastewater effluent limitation of 30 mg/L for Total Suspended Solids (TSS) has been applied to stormwater runoff from agricultural fields where industrial sludge has been applied. TSS limits for stormwater in the Environmental Protection Agencies (EPA) Multi-sector General Permit (MSGP) for similar industrial activities are 100 mg/L. Therefore, the effluent limitation for TSS has been changed to 100 mg/l for stormwater runoff from land application fields.

ANTIDEGRADATION:
In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(2)], the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

- ✓ Renewal no degradation proposed and no further review necessary.

BENCHMARKS:
When a permitted feature has associated parameters that may alter the operation and maintenance of the land application activity depending on wastewater or sludge quality, a benchmark may be implemented at the discretion of the permit writer. Benchmarks require the facility to monitor, and if necessary, adjust operations and maintenance or replace and update land application control measures. Benchmark concentrations are not effluent limitations. A benchmark exceedance, therefore, is not a permit violation; however, failure to take corrective action is a violation of the permit. Benchmark monitoring data is used to determine the overall effectiveness of control measures and to assist the permittee in knowing when additional corrective actions may be necessary to comply with the technology based effluent limitations (TBEL).

Numeric benchmark values are based on state regulations 10 CSR 20-8.020(15), the *U.S. Environmental Protection Agency Process Design Manual for Land Treatment of Municipal Wastewater* (EPA/625/R-06/016), or other pertinent, reviewed and accepted materials regarding land application activity.

- ✓ Not applicable; this facility does not have operational and maintenance issues that would warrant change to the operation.

BIOSOLIDS & SEWAGE SLUDGE:
Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works. Additional information regarding biosolids and sludge is located at the following web address: http://extension.missouri.edu/main/DisplayCategory.aspx?C=74, items WQ422 through WQ449.

- ✓ Permittee land applies biosolids in accordance with Standard Conditions III and a Department approved biosolids management plan.

INDUSTRIAL SLUDGE:
Industrial sludge is solids, semi-solids, or liquid residue generated during the treatment of industrial process wastewater in a treatment works; including but not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment process; scum and solids filtered from water supplies and backwashed; and a material derived from industrial sludge.

- ✓ Applicable; Permittee land applies industrial sludge in accordance with Standard Conditions III and a Department approved sludge management plan.

COMPLIANCE AND ENFORCEMENT:
Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

- ✓ Not Applicable; The permittee/facility is not currently under Water Protection Program enforcement action.

NUTRIENT MANAGEMENT AND LAND APPLICATION

Land applications by a contract hauler on fields that the permittee has a spreading agreement on are not required to be in this permit. A spreading agreement does not constitute the field being rented or leased by the permittee as they do not have any control over management of the field.

The fertilizer recommendation is the amount of nutrients required for a crop to produce the expected yield. The agronomic rate is the amount of sludge applied to a field to supply the amount of nutrients to meet the fertilizer recommendation. For more information on nutrient management, PAN calculatons, and land application best management practices, consult the following University of Missouri Extension Guides:

WQ421 State and EPA Regulations for Domestic Wastewater Sludge and Biosolids
WQ422 Land Application of Septage
WQ423 Monitoring Requirements for Biosolids Land Application
WQ424 Biosolids Standards for Pathogens and Vectors
WQ425 Biosolids Standards for Metals and Other Trace Substances
WQ426 Best Management Practices for Biosolids Land Application
WQ427 Benefits and Risks of Biosolids
WQ428 Activity and Movement of Plant Nutrients and Other Trace Substances
WQ429 Interpretation of Laboratory Analysis of Biosolids Samples
WQ430 Crop/Nutrient Considerations of Biosolids
WQ431 Collection and Storage of Biosolids
WQ432 Equipment for Off-site Application of Biosolids
WQ433 Equipment for On-site Land Application of Biosolids
WQ434 Operating Considerations for Biosolids Equipment
WQ449 Biosolids Glossary of Terms

Nitrogen based applications are when the amount sludge applied is based on the nitrogen fertilizer recommendation for the planned crop. Phosphorous based applications are when the amount of sludge applied is based on the phosphorous fertilizer recommendation for the planned crop.

Fertilizer recommendations can also be obtained by using the University of Missouri Extension online fertilizer recommendation calculator at http://soilplantlab.missouri.edu/soil/scripts/manualentry.aspx

The Missouri P-Index is a tool to evaluate the potential for phosphorus loss from land application fields. It uses information such as soil test phosphorus result, cropping practices, RUSLE, land cover, and distance to water to calculate a rating for the risk phosphorus transport from the field. The P-index is available at http://nmplanner.missouri.edu/tools/pindex.asp0.

The Missouri Soil Testing Association provides a list of accredited labs at http://soilplantlab.missouri.edu/soil/msta.aspx .

Conversion Factors for laboratory testing results: [mg/L or mg/kg or ppm] x [conversion factor] = [pounds per Unit Volume]

Unit Volume	Conversion Factors
lbs./acre inch	0.226
lbs./1,000 gallons	0.0083
lbs./100 cubic feet	0.0062
lbs/ton (wet weight)	0.002

Oil and grease sludges with low nitrogen content, more than 20:1 Carbon to Nitrogen ratio, may require supplemental nitrogen application to provide proper decomposition of the oil content and prevent nitrogen deficiencies for the crop.

REASONABLE POTENTIAL ANALYSIS (RPA):
Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard. In accordance with [40 CFR Part 122.44(d)(1)(iii)] if the permit writer determines that any give pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

- ✓ Not applicable; a RPA was not conducted for this facility.

SCHEDULE OF COMPLIANCE (SOC):
A schedule of remedial measures included in a permit, including an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit.

- ✓ Not Applicable This permit does not contain a SOC.

SPILL REPORTING:
Per 10 CSR 24-3.010, any emergency involving a hazardous substance must be reported to the department's 24 hour Environmental Emergency Response hotline at (573) 634-2436 at the earliest practicable moment after discovery. The department may require the submittal of a written report detailing measures taken to clean up a spill. These reporting requirements apply whether or not the spill results in chemicals or materials leaving the permitted property or reaching waters of the state. This requirement is in addition to the Noncompliance Reporting requirement found in Standard Conditions Part I.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP):
In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities: (2) Authorized under section 402(p) of the CWA for the control of storm water discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Storm Water Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of storm water discharges.

- ✓ Not Applicable At this time, the permittee is not required to develop and implement a SWPPP.

VARIANCE:
As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

- ✓ Not Applicable This operating permit is not drafted under premises of a petition for variance.

WATER QUALITY STANDARDS:
Per [10 CSR 20-7.031(3)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

40 CFR 122.41(M) - BYPASSES:
The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from "bypassing" untreated or partially treated sewage (wastewater) beyond the headworks. A bypass is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-2.010(11) defines a bypass as the diversion of wastewater from any portion of wastewater treatment facility or sewer system to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri's Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

- ✓ Not Applicable This facility does not anticipate bypassing.

Part IV – Permit Limits Determination

Permitted Feature #001-#012 – Emergency Discharge
There are no effluent limits associated with Permitted Feature #001-#012 for the no-discharge facility. However, the following is required for an emergency discharge. Monitoring requirement only based on best professional judgment.

EMERGENCY DISCHARGE TABLE:

PARAMETER	UNIT	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Flow	MGD	*			NO	*
Biochemical Oxygen Demand$_5$	mg/L	*			NO	*
Total Suspended Solids	mg/L	*			NO	*
Ammonia as N	mg/L	*			NO	*
pH	SU	*			NO	*
Oil & Grease	mg/L	*			YES	***
Nitrate as Nitrogen	mg/L	*			YES	Removed
Temperature	^{o}C	*			YES	Removed
Monitoring Frequency	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.					

* - Monitoring requirement only
** - # of colonies/100mL; the Monthly Average for E. coli is a geometric mean.
*** - Parameter not established in previous state operating permit.

- **Minimum Sampling and Reporting Frequency Requirements**.

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Flow	once/day while discharging	Test results are due on the 28th day of the month after the cessation of the discharge
Biochemical Oxygen Demand$_5$	once/day while discharging	
Total Suspended Solids	once/day while discharging	
Ammonia as N	once/day while discharging	
pH	once/day while discharging	
Oil & Grease	once/day while discharging	

PERMITTED FEATURE #001 –APPLIED SLUDGE MONITORING
Irrigation limitations derived and established in the below Irrigation Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

SLUDGE MONITORING TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
SLUDGE							
pH	SU	1	*				*
Total Kjeldahl Nitrogen as N	mg/L	1	*				*
Ammonia Nitrogen as N	mg/L	1	*				*
Nitrate Nitrogen as N	mg/L	1	*				*
Total Phosphorus as P	mg/L	1	*				*
Percent Solids	percent	1	*				*
Chlorides	mg/kg	1	*				250
Sodium Adsorption Ratio (SAR)	ratio	1	*				5
Arsenic	mg/kg	1	*				*
Cadmium	mg/kg	1	*				*
Copper	mg/kg	1	*				*
Lead	mg/kg	1	*				*
Molybdenum	mg/kg	1	*				*
Nickel	mg/kg	1	*				*
Selenmium	mg/kg	1	*				*
Zinc	mg/kg	1	*				*
Monitoring Frequency	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* - Monitoring requirement only
** - # of colonies/100mL; the Monthly Average for E. coli is a geometric mean.

Basis for Limitations Codes:
1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Lagoon Policy
5. Ammonia Policy
6. Antidegradation Review
7. Antidegradation Policy
8. Water Quality Model
9. Best Professional Judgment
10. TMDL or Permit in lieu of TMDL
11. WET Test Policy

PERMITTED FEATURE #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **pH.** Monitoring requirement only. Monitoring for pH is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Total Kjeldahl Nitrogen.** Monitoring requirement only. Monitoring for Total Kjeldahl Nitrogen as N is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Ammonia Nitrogen as N.** Monitoring requirement only. Monitoring for Ammonia Nitrogen as N is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Nitrate Nitrogen as N.** Monitoring requirement only. Monitoring for Nitrate Nitrogen as N is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Total Phosphorous.** Monitoring requirement only. Monitoring for Nitrate Nitrogen as N is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Percent Solids**. Monitoring requirement only. Monitoring for Percent Solids is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Chlorides.** Monitoring requirement only. Monitoring for Chlorides is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Sodium Adsorption Ratio (SAR).** Monitoring requirement only. Monitoring for SAR is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Arsenic** Monitoring requirement only. Monitoring for Arsenic is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Cadmium.** Monitoring requirement only. Monitoring for Cadmium is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Copper.** Monitoring requirement only. Monitoring for Copper is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Lead.** Monitoring requirement only. Monitoring for Lead is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Mercury.** Monitoring requirement only. Monitoring for Mercury is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Molybdenum.** Monitoring requirement only. Monitoring for Molybdenum is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Nickel.** Monitoring requirement only. Monitoring for Nickel is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Selenium.** Monitoring requirement only. Monitoring for Selenium is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Zinc.** Monitoring requirement only. Monitoring for Ainc is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

Minimum Sampling and Reporting Frequency Requirements.

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
pH	once/quarter	once/year
Total Kjeldahl Nitrogen as N	once/quarter	once/year
Ammonia Nitrogen as N	once/quarter	once/year
Nitrate Nitrogen as N	once/quarter	once/year
Total Phosphorus as P	once/quarter	once/year
Percent Solids	once/quarter	once/year
Chlorides	once/quarter	once/year
Sodium Adsorption Ratio (SAR)	once/quarter	once/year

PERMITTED FEATURES #002-#012 – LAND APPLICATION OF SLUDGE AND SOIL MONITORING

PARAMETER	UNIT	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
SLUDGE LAND APPLIED						
Volume of Sludge Applied	gallons	*			NO	
Application Area	acres	*			NO	
Application Rate	Inches/ acre	*			NO	
SOIL MONITORING						
Ammonia s N	mg/kg	*			NO	
Nitrate Nitrogen as N	mg/kg	*			NO	
pH - Units	SU	*			NO	
Available Phosphorus as P (Bray 1-P method)	mg/kg	*			NO	
Total Sodium	mg/kg	*			NO	
Exchangeable Sodium	%	*			NO	

* - Monitoring requirement only.

PERMITTED FEATURES #002-#012 – DERIVATION AND DISCUSSION OF LIMITS:

- **Volume of Sludge Applied**. Monitoring requirement only. Monitoring for the Volume Irrigated is included to determine if proper application is occurring on the land application fields.

- **Application Area.** Monitoring requirement only. Monitoring for the Application Area is included to determine if proper application is occurring on the land application fields.

- **Application Rate**. Monitoring requirement only. Monitoring for the Application Rate is included to determine if proper application is occurring on the land application fields.

SOIL MONITORING

- **Ammonia as N.** Monitoring requirement only. Monitoring for Ammonia as N is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Nitrate Nitrogen as N.** Monitoring requirement only. Monitoring for Nitrate Nitrogen as N is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **pH.** Monitoring requirement only. Monitoring for pH is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Available Phosphorus as P.** Monitoring requirement only. Monitoring for Available Phosphorus as P is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)7.]

- **Total Sodium.** Monitoring requirement only. Monitoring for Total Sodium is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)8.]

- **Exchangeable Sodium.** Monitoring requirement only. Monitoring for Exchangeable Sodium is included to determine nutrient loading rates on the land application fields. [10 CSR 20-8.020(15)(F)8.]

Minimum Sampling and Reporting Frequency Requirements.

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Land Application Monitoring		
Volume of Sludge Applied	daily	once/year
Application Area	daily	once/year
Application Rate	daily	once/year
Soil Monitoring		
Ammonia s N	once/5 years	once/5 years
Nitrate Nitrogen as N	once/5 years	once/5 years
pH - Units	once/5 years	once/5 years
Available Phosphorus as P (Bray 1-P method)	once/5 years	once/5 years
Total Sodium	once/5 years	once/5 years
Exchangeable Sodium	once/5 years	once/5 years

PERMITTED FEATURES #002-#012 – LAND APPLICATION FIELD STORMWATER MONITORING
Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Flow	gal./day	*			YES	***
BOD_5	mg/L				REMOVED	30
COD	mg/L	120			YES	*
Total Suspended Solids	mg/L	100			YES	30
TKN as N	mg/L	*			NO	*
Ammonia as N	mg/L	2.0			NO	2.0
Nitrate Nitrogen as N	mg/L	3.0			NO	3.0
Chlorides	mg/L	230			NO	230
Oil and Grease	mg/L	10			NO	10
Total Phosphorous as P	mg/L	*			NO	*
E. Coli**	#/100 mL	*			NO	*
pH	SU	6.5-9.0			NO	6.5-9.0
Temperature	C	*			REMOVED	*
Total Boron	mg/L	*			NO	*

* - Monitoring requirement only
** - # of colonies/100mL; the Monthly Average for E. coli is a geometric mean.
*** - Paramater not in previous permit.

PERMITTED FEATURE #002-012 – DERIVATION AND DISCUSSION OF LIMITS:

- **FLOW**. Monitoring requirement only.
- **BOD_5**. Monitoring requirement has been removed from the permit.
- **COD.** Monitoring only requirement has been changed to an effluent limitation of 120 mg/L. This effluent limitation is consistent with the EPAs MSGP for similar industrial activities.
- **Total Suspended Solids.** The wastewater effluent limitation of 30 mg/L for Total Suspended Solids (TSS) has been applied to stormwater runoff from agricultural fields where industrial sludge is been applied. TSS limits for stormwater in the Environmental Protection Agencies (EPS) Multi-sector General Permit (MSGP) for similar industrial activities are 100 mg/L. Therefore, the effluent limitation for TSS has been changed to 100 mg/l for stormwater runoff from land application fields.
- **TKN as N**. Retained from previous state operating permit.
- **Ammonia as N.** Retained from previous state operating permit.
- **Chlorides.** Retained from previous state operating permit.
- **Nitrate Nitrogen as N**. Retained from previous state operating permit.
- **E. Coli.** Retained from previous state operating permit.
- **Oil and Grease.** Retained from previous state operating permit.
- **pH**. Retained from previous state operating permit.
- **Total Phosphorous as P.** Retained from previous state operating permit.
- **Total Boron.** Retained from previous state operating permit.

Minimum Sampling and Reporting Frequency Requirements.

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Flow	*	once/quarter
COD	*	once/quarter
Total Suspended Solids	*	once/quarter
TKN as N	*	once/quarter
Ammonia as N	*	once/quarter
Nitrate Nitrogen as N	*	once/quarter
Chlorides	*	once/quarter
Oil and Grease	*	once/quarter
Total Phosphorous as P	*	once/quarter
E. Coli	*	once/quarter
pH	*	once/quarter
Total Boron	*	once/quarter

* Sampling shall be conducted the month prior to sludge application at a given site and shall be conducted for at least three (3) months following sludge application at a given site.

PERMITTED FEATURES #S01-#S06 –STREAM MONITORING
Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supersede the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
Ammonia nitrogen as N	mg/L	*			NO	*
Nitrate nitrogen as N	mg/L	*			NO	*
Dissolved Phosphorus as P	mg/L	*			NO	*
Temperature	°C	*			REMOVED	*
pH	SU	***			NO	***
Dissolved Oxygen	mg/L	*			NO	*
Total Suspended Solids	mg/L	*			NO	*

- **Ammonia nitrogen as N.** Retained from previous state operating permit.
- **Nitrate nitrogen as N.** Retained from previous state operating permit.
- **Dissolved Phosphorus as P.** Retained from previous state operating permit.
- **pH.** Retained from previous state operating permit.
- **Dissolved Oxygen.** Retained from previous state operating permit.
- **Total Suspended Solids.** Retained from previous state operating permit.

Minimum Sampling and Reporting Frequency Requirements.

PARAMETER	SAMPLING FREQUENCY	REPORTING FREQUENCY
Ammonia nitrogen as N	*	once/quarter
Nitrate nitrogen as N	*	once/quarter
Dissolved Phosphorus as P	*	once/quarter
pH	*	once/quarter
Dissolved Oxygen	*	once/quarter
Total Suspended Solids	*	once/quarter

* Sampling shall be conducted the month prior to sludge application at a given site and shall be conducted for at least three (3) months following sludge application at a given site.

Part V – Finding of Affordability

Pursuant to Section 644.145, RSMo., the Department is required to determine whether a permit or decision is affordable and makes a finding of affordability for certain permitting and enforcement decisions. This requirement applies to discharges from combined or separate sanitary sewer systems or publically-owned treatment works.

- ✓ Not Applicable; The Department is not required to determine findings of affordability because the permit contains no new conditions or requirements that convey a new cost to the facility.

Part VI – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

PERMIT SYNCHRONIZATION:
The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the department to explore a watershed based permitting effort at some point in the future. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit.

PUBLIC NOTICE:
The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing.

The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit.

For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- ✓ The Public Notice period for this operating permit was from November 10, 2016 to December 12, 2016. One response was received.

DATE OF FACT SHEET: DECEMBER 21, 2016

COMPLETED BY:

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STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

Part I – General Conditions
Section A – Sampling, Monitoring, and Recording

1. **Sampling Requirements.**
   a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
   b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.

2. **Monitoring Requirements**.
   a. Records of monitoring information shall include:
      i. The date, exact place, and time of sampling or measurements;
      ii. The individual(s) who performed the sampling or measurements;
      iii. The date(s) analyses were performed;
      iv. The individual(s) who performed the analyses;
      v. The analytical techniques or methods used; and
      vi. The results of such analyses.
   b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.

3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.

4. **Test Procedures**. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is "sufficiently sensitive" when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.

5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

6. **Illegal Activities.**
   a. The Federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
   b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

Section B – Reporting Requirements

1. **Planned Changes.**
   a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
      i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
      ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42;
      iii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
      iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.

2. **Non-compliance Reporting.**
   a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

b. The following shall be included as information which must be reported within 24 hours under this paragraph.
   i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
   ii. Any upset which exceeds any effluent limitation in the permit.
   iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.

c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.

3. **Anticipated Noncompliance**. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.

4. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.

5. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.

6. **Other Information**. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

7. **Discharge Monitoring Reports.**
   a. Monitoring results shall be reported at the intervals specified in the permit.
   b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
   c. Monitoring results shall be reported to the Department no later than the 28th day of the month following the end of the reporting period.

Section C – Bypass/Upset Requirements

1. **Definitions.**
   a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending.
   b. *Severe Property Damage*: 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 production.
   c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2. **Bypass Requirements.**
   a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.
   b. Notice.
      i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
      ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
   c. Prohibition of bypass.
      i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
         1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
         2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
         3. The permittee submitted notices as required under paragraph 2. b. of this section.
      ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.

3. **Upset Requirements.**
   a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
   b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
      i. An upset occurred and that the permittee can identify the cause(s) of the upset;
      ii. The permitted facility was at the time being properly operated; and
      iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
      iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
   c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section D – Administrative Requirements

1. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
   a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
   b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement

imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed $10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than $50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

2. **Duty to Reapply.**
   a. 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.
   b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
   c. A permittees with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

5. **Proper Operation and Maintenance**. 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 back-up 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.

6. **Permit Actions.**
   a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
      i. Violations of any terms or conditions of this permit or the law;
      ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
      iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
      iv. Any reason set forth in the Law or Regulations.
   b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. **Permit Transfer.**
   a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
   b. The Department 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 Missouri Clean Water Law or the Federal Clean Water Act.
   c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.

8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department 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 Department upon request, copies of records required to be kept by this permit.

11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon 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 the 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; and
    d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

12. **Closure of Treatment Facilities.**
    a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
    b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.

13. **Signatory Requirement.**
    a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
    b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
    c. The Missouri Clean Water Law 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 pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.

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

STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
March 1, 2015

PART III – SLUDGE AND BIOSOLIDS FROM DOMESTIC AND INDUSTRIAL WASTEWATER TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. This permit pertains to sludge requirements under the Missouri Clean Water Law and regulation for domestic wastewater and industrial process wastewater. This permit also incorporates applicable federal sludge disposal requirements under 40 CFR 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR 503 for domestic wastewater. EPA has reviewed and accepted these standard sludge conditions. EPA may choose to issue a separate sludge addendum to this permit or a separate federal sludge permit at their discretion to further address the federal requirements.
2. These PART III Standard Conditions apply only to sludge and biosolids generated at domestic wastewater treatment facilities, including public owned treatment works (POTW), privately owned facilities and sludge or biosolids generated at industrial facilities.
3. Sludge and Biosolids Use and Disposal Practices:
    a. The permittee is authorized to operate the sludge and biosolids treatment, storage, use, and disposal facilities listed in the facility description of this permit.
    b. The permittee shall not exceed the design sludge volume listed in the facility description and shall not use sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
    c. The permittee is authorized to operate the storage, treatment or generating sites listed in the Facility Description section of this permit.
4. Sludge Received from other Facilities:
    a. Permittees may accept domestic wastewater sludge from other facilities including septic tank pumpings from residential sources as long as the design sludge volume is not exceeded and the treatment facility performance is not impaired.
    b. The permittee shall obtain a signed statement from the sludge generator or hauler that certifies the type and source of the sludge
5. These permit requirements do not supersede nor remove liability for compliance with county and other local ordinances.
6. These permit requirements do not supersede nor remove liability for compliance with other environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Act or under Chapter 644 RSMo.
8. In addition to STANDARD CONDITIONS, the Department may include sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Alternate Limits in the Site Specific Permit.
   Where deemed appropriate, the Department may require an individual site specific permit in order to authorize alternate limitations:
    a. A site specific permit must be obtained for each operating location, including application sites.
    b. To request a site specific permit, an individual permit application, permit fee, and supporting documents shall be submitted for each operating location. This shall include a detailed sludge/biosolids management plan or engineering report.
10. Exceptions to these Standard Conditions may be authorized on a case-by-case basis by the Department, as follows:
    a. The Department will prepare a permit modification and follow permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR 124.10, and 40 CFR 501.15(a)(2)(ix)(E). This includes notification of the owner of the property located adjacent to each land application site, where appropriate.
    b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR 503.

SECTION B – DEFINITIONS

1. Best Management Practices include agronomic loading rates, soil conservation practices and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PFRP) in accordance with 40 CFR 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Industrial wastewater means any wastewater, also known as process water, not defined as domestic wastewater. Per 40 CFR Part 122, process water means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.
8. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including septic tanks, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological discs, and other similar facilities. It does not include wastewater treatment lagoons and constructed wetlands for wastewater treatment.
9. Operating location as defined in 10 CSR 20-2.010 is all contiguous lands owned, operated or controlled by one (1) person or by two (2) or more persons jointly or as tenants in common.
10. Plant Available Nitrogen (PAN) is the nitrogen that will be available to plants during the growing seasons after biosolids application.
11. Public contact site is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
12. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks or equivalent facilities. Sludge does not include carbon coal byproducts (CCBs)
13. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
14. Septage is the material pumped from residential septic tanks and similar treatment works (with a design population of less than 150 people). The standard for biosolids from septage is different from other sludges.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and sludge conditions of this permit.
2. The permittee shall operate the facility so that there is no sludge discharged to waters of the state.
3. Mechanical treatment plants shall have separate sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove sludge from these storage compartments on the required design schedule is a violation of this permit.

SECTION D – SLUDGE DISPOSED AT OTHER TREATMENT FACILITY OR CONTRACT HAULER

1. This section applies to permittees that haul sludge to another treatment facility for disposal or use contract haulers to remove and dispose of sludge.
2. Permittees that use contract haulers are responsible for compliance with all the terms of this permit including final disposal, unless the hauler has a separate permit for sludge or biosolids disposal issued by the Department; or the hauler transports the sludge to another permitted treatment facility.
3. Haulers who land apply septage must obtain a state permit.
4. Testing of sludge, other than total solids content, is not required if sludge is hauled to a municipal wastewater treatment facility or other permitted wastewater treatment facility, unless it is required by the accepting facility.

SECTION E – INCINERATION OF SLUDGE

1. Sludge incineration facilities shall comply with the requirements of 40 CFR 503 Subpart E; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or if the ash is determined to be hazardous with 10 CSR 25.
3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, quantity of sludge incinerated, quantity of ash generated, quantity of ash stored, and ash used or disposal method, quantity, and location. Permittee shall also provide the name of the disposal facility and the applicable permit number.

SECTION F – SURFACE DISPOSAL SITES AND SLUDGE LAGOONS

1. Surface disposal sites of domestic facilities shall comply with the requirements in 40 CFR 503 Subpart C; air pollution control regulations under 10 CSR 10; and solid waste management regulations under 10 CSR 80.
2. Sludge storage lagoons are temporary facilities and are not required to obtain a permit as a solid waste management facility under 10 CSR 80. In order to maintain sludge storage lagoons as storage facilities, accumulated sludge must be removed routinely, but not less than once every two years unless an alternate schedule is approved in the permit. The amount of sludge removed will be dependent on sludge generation and accumulation in the facility. Enough sludge must be removed to maintain adequate storage capacity in the facility.
    a. In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of sludge on the bottom of the lagoon, upon prior approval of the Department; or
    b. Permittee shall close the lagoon in accordance with Section H.

SECTION G – LAND APPLICATION

1. The permittee shall not land apply sludge or biosolids unless land application is authorized in the facility description or the special conditions of the issued NPDES permit.
2. Land application sites within a 20 miles radius of the wastewater treatment facility are authorized under this permit when biosolids are applied for beneficial use in accordance with these standard conditions unless otherwise specified in a site specific permit. If the permittee's land application site is greater than a 20 mile radius of the wastewater treatment facility, approval must be granted from the Department.
3. Land application shall not adversely affect a threatened or endangered species or its designated critical habitat.
4. Biosolids shall not be applied unless authorized in this permit or exempted under 10 CSR 20, Chapter 6.
    a. This permit does not authorize the land application of domestic sludge except for when sludge meets the definition of biosolids.
    b. This permit authorizes "Class A or B" biosolids derived from domestic wastewater and/or process water sludge to be land applied onto grass land, crop land, timber or other similar agricultural or silviculture lands at rates suitable for beneficial use as organic fertilizer and soil conditioner.
5. Public Contact Sites:

    Permittees who wish to apply Class A biosolids to public contact sites must obtain approval from the Department after two years of proper operation with acceptable testing documentation that shows the biosolids meet Class A criteria. A shorter length of testing will be allowed with prior approval from the Department. Authorization for land applications must be provided in the special conditions section of this permit or in a separate site specific permit.
    a. After Class B biosolids have been land applied, public access must be restricted for 12 months.
    b. Class B biosolids are only land applied to root crops, home gardens or vegetable crops whose edible parts will not be for human consumption.
6. Agricultural and Silvicultural Sites:

    Septage – Based on Water Quality guide 422 (WQ422) published by the University of Missouri
    a. Haulers that land apply septage must obtain a state permit
    b. Do not apply more than 30,000 gallons of septage per acre per year.
    c. Septage tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to other mechanical type treatment facilities.
    d. To meet Class B sludge requirements, maintain septage at 12 pH for at least thirty (30) minutes before land application. 50 pounds of hydrated lime shall be added to each 1,000 gallons of septage in order to meet pathogen and vector stabilization for septage biosolids applied to crops, pastures or timberland.
    e. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.

Biosolids - Based on Water Quality guide 423, 424, and 425 (WQ423, WQ424, WQ425) published by the University of Missouri;

a. Biosolids shall be monitored to determine the quality for regulated pollutants

b. The number of samples taken is directly related to the amount of sludge produced by the facility (See Section I of these Standard Conditions). Report as dry weight unless otherwise specified in the site specific permit. Samples should be taken only during land application periods. When necessary, it is permissible to mix biosolids with lower concentrations of biosolids as well as other suitable Department approved material to reach the maximum concentration of pollutants allowed.

c. Table 1 gives the maximum concentration allowable to protect water quality standards

TABLE 1

Biosolids ceiling concentration [1]	
Pollutant	Milligrams per kilogram dry weight
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

[1] Land application is not allowed if the sludge concentration exceeds the maximum limits for any of these pollutants

d. The low metal concentration biosolids has reduced requirements because of its higher quality and can safely be applied for 100 years or longer at typical agronomic loading rates. (See Table 2)

TABLE 2

Biosolids Low Metal Concentration [1]	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	36
Zinc	2,800

[1] You may apply low metal biosolids without tracking cumulative metal limits, provided the cumulative application of biosolids does not exceed 500 dry tons per acre.

e. Each pollutant in Table 3 has an annual and a total cumulative loading limit, based on the allowable pounds per acre for various soil categories.

TABLE 3

Pollutant	CEC 15+		CEC 5 to 15		CEC 0 to 5	
	Annual	Total [1]	Annual	Total [1]	Annual	Total [1]
Arsenic	1.8	36.0	1.8	36.0	1.8	36.0
Cadmium	1.7	35.0	0.9	9.0	0.4	4.5
Copper	66.0	1,335.0	25.0	250.0	12.0	125.0
Lead	13.0	267.0	13.0	267.0	13.0	133.0
Mercury	0.7	15.0	0.7	15.0	0.7	15.0
Nickel	19.0	347.0	19.0	250.0	12.0	125.0
Selenium	4.5	89.0	4.5	44.0	1.6	16.0
Zinc	124.0	2,492.0	50.0	500.0	25.0	250.0

[1] Total cumulative loading limits for soils with equal or greater than 6.0 pH (salt based test) or 6.5 pH (water based test)

TABLE 4 - Guidelines for land application of other trace substances [1]

Cumulative Loading	
Pollutant	Pounds per acre
Aluminum	4,000[2]
Beryllium	100
Cobalt	50
Fluoride	800
Manganese	500
Silver	200
Tin	1,000
Dioxin	(10 ppt in soil)[3]
Other	[4]

[1] Design of land treatment systems for Industrial Waste, 1979. Michael Ray Overcash, North Carolina State University and Land Treatment of Municipal Wastewater, EPA 1981.)

[2] This applies for a soil with a pH between 6.0 and 7.0 (salt based test) or a pH between 6.5 to 7.5 (water based test). Case-by-case review is required for higher pH soils.

[3] Total Dioxin Toxicity Equivalents (TEQ) in soils, based on a risk assessment under 40 CFR 744, May 1998.

[4] Case by case review. Concentrations in sludge should not exceed the 95th percentile of the National Sewage Sludge Survey, EPA, January 2009.

Best Management Practices – Based on Water Quality guide 426 (WQ426) published by the University of Missouri

a. Use best management practices when applying biosolids.
b. Biosolids cannot discharge from the land application site
c. Biosolid application is subject to the Missouri Department of Agriculture State Milk Board concerning grazing restrictions of lactating dairy cattle.
d. Biosolid application must be in accordance with section 4 of the Endangered Species Act.
e. Do not apply more than the agronomic rate of nitrogen needed.
f. The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.
    i. PAN can be determined as follows and is in accordance with WQ426
    (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).
    [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application.
g. Buffer zones are as follows:
    i. 300 feet of a water supply well, sinkhole, lake, pond, water supply reservoir or water supply intake in a stream;
    ii. 300 feet of a losing stream, no discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
    iii. 150 feet if dwellings;
    iv. 100 feet of wetlands or permanent flowing streams;
    v. 50 feet of a property line or other waters of the state, including intermittent flowing streams.
h. Slope limitation for application sites are as follows;
    i. A slope 0 to 6 percent has no rate limitation
    ii. Applied to a slope 7 to 12 percent, the applicator may apply biosolids when soil conservation practices are used to meet the minimum erosion levels
    iii. Slopes > 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.
i. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
j. Do not apply biosolids to sites with soil that is snow covered, frozen or saturated with liquid without prior approval by the Department.
k. Biosolids / sludge applicators must keep detailed records up to five years.

SECTION H – CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical, industrial, and lagoons) and sludge or biosolids storage and treatment facilities and incineration ash ponds. It does not apply to land application sites.
2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all residues, including sludge, biosolids. Mechanical plants, sludge lagoons, ash ponds and other storage structures must obtain approval of a closure plan from the Department. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6. 010 and 10 CSR 20 – 6.015.
3. Residuals that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
    a. Residuals shall meet the monitoring and land application limits for agricultural rates as referenced in Section H of these standard conditions.
    b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
    c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre.
        i. PAN can be determined as follows:

        (Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor[1]).

        [1] Volatilization factor is 0.7 for surface application and 1 for subsurface application.
4. When closing a domestic wastewater treatment lagoon with a design treatment capacity equal or less than 150 persons, the residuals are considered "septage" under the similar treatment works definition. See Section B of these standard conditions. Under the septage category, residuals may be left in place as follows:
    a. Testing for metals or fecal coliform is not required
    b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
    c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.
5. Residuals left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, the lagoon berm shall be demolished, and the site shall be graded and contain ≥70% vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
6. Lagoons and/or earthen structure and/or ash pond closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200
7. When closing a mechanical wastewater and/or industrial process wastewater plant; all sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
    a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain ≥70% vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion.
    b. Per 10 CSR 20-6.015(4)(B)6, Hazardous Waste shall not be land applied or disposed during industrial and mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations under 10 CSR 25.
    c. After demolition of the mechanical plant / industrial plant, the site must only contain clean fill defined in RSMo 260.200 (5) as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill or other beneficial use. Other solid wastes must be removed.
8. If sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or H, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR 503, Subpart C.

SECTION I – MONITORING FREQUENCY

1. At a minimum, sludge or biosolids shall be tested for volume and percent total solids on a frequency that will accurately represent sludge quantities produced and disposed. Please see the table below.

TABLE 5

Design Sludge Production (dry tons per year)	Monitoring Frequency (See Notes 1, 2, and 3)			
	Metals, Pathogens and Vectors	Nitrogen TKN [1]	Nitrogen PAN [2]	Priority Pollutants and TCLP [3]
0 to 100	1 per year	1 per year	1 per month	1 per year
101 to 200	biannual	biannual	1 per month	1 per year
201 to 1,000	quarterly	quarterly	1 per month	1 per year
1,001 to 10,000	1 per month	1 per month	1 per week	--[4]
10,001 +	1 per week	1 per week	1 per day	--[4]

[1] Test total Kjeldahl nitrogen, if biosolids application is 2 dry tons per acre per year or less.

[2] Calculate plant available nitrogen (PAN) when either of the following occurs: 1) when biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.

[3] Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) and toxicity characteristic leaching procedure (40 CFR 261.24) is required only for permit holders that must have a pre-treatment program.

[4] One sample for each 1,000 dry tons of sludge.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids. This data shall be used to calculate the dry tons of sludge applied per acre.
Note 2: Total Phosphorus: Total phosphorus and total potassium shall be tested at the same monitoring frequency as metals.
Note 3: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

2. If you own a wastewater treatment lagoon or sludge lagoon that is cleaned out once a year or less, you may choose to sample only when the sludge is removed or the lagoon is closed. Test one composite sample for each 100 dry tons of sludge or biosolids removed from the lagoon during the year within the lagoon at closing. Composite sample must represent various areas at one-foot depth.
3. Additional testing may be required in the special conditions or other sections of the permit. Permittees receiving industrial wastewater may be required to conduct additional testing upon request from the Department.
4. At this time, the Department recommends monitoring requirements shall be performed in accordance with, "POTW Sludge Sampling and Analysis Guidance Document," United States Environmental Protection Agency, August 1989, and the subsequent revisions.

SECTION J – RECORD KEEPING AND REPORTING REQUIREMENTS

1. The permittee shall maintain records on file at the facility for at least five years for the items listed in these standard conditions and any additional items in the Special Conditions section of this permit. This shall include dates when the sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
2. Reporting period
    a. By January 28th of each year, an annual report shall be submitted for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and sludge or biosolids disposal facilities.
    b. Permittees with wastewater treatment lagoons shall submit the above annual report only when sludge or biosolids are removed from the lagoon during the report period or when the lagoon is closed.
3. Report Forms. The annual report shall be submitted on report forms provided by the Department or equivalent forms approved by the Department.
4. Reports shall be submitted as follows:

Major facilities (those serving 10,000 persons or 1 million gallons per day) shall report to both the Department and EPA. Other facilities need to report only to the Department. Reports shall be submitted to the addresses listed as follows:

DNR regional office listed in your permit
(see cover letter of permit)
ATTN: Sludge Coordinator

EPA Region VII
Water Compliance Branch (WACM)
Sludge Coordinator
11201 Renner Blvd.
Lenexa, KS 66219

5. Annual report contents. The annual report shall include the following:
    a. Sludge and biosolids testing performed. Include a copy or summary of all test results, even if not required by the permit.
    b. Sludge or biosolids quantity shall be reported as dry tons for quantity generated by the wastewater treatment facility, the quantity stored on site at the end of the year, and the quantity used or disposed.
    c. Gallons and % solids data used to calculate the dry ton amounts.
    d. Description of any unusual operating conditions.
    e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
        i. This must include the name, address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
        ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
    f. Contract Hauler Activities:
    If contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate sludge or biosolids use permit.
    g. Land Application Sites:
        i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest ¼, ¼, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
        ii. If the “Low Metals” criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
        iii. Report the method used for compliance with pathogen and vector attraction requirements.
        iv. Report soil test results for pH, CEC, and phosphorus. If none was tested during the year, report the last date when tested and results.

RECEIVED
JAN 12 2016
Water Protection Program

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
FORM A – APPLICATION FOR NONDOMESTIC PERMIT UNDER MISSOURI CLEAN WATER LAW

FOR AGENCY USE ONLY	
CHECK NUMBER	
DATE RECEIVED 1-12-16	FEE SUBMITTED

Note ► PLEASE READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM.

1. This application is for:
   - ☐ An operating permit for a new or unpermitted facility:
     Please indicate the original Construction Permit # _____
   - ☑ An operating permit renewal:
     Please indicate the permit # MO- 0123552 Expiration Date July 11, 2016
   - ☐ An operating permit modification:
     Please indicate the permit # MO-_____ Modification Reason: _____

1.1 Is the appropriate fee included with the application? (See instructions for appropriate fee) ☑ YES ☐ NO

2. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE
Ajinomoto Windsor, Inc. Wastewater Treatment Plant		(573) 223-7722
		FAX (573) 223-2412
ADDRESS (PHYSICAL) # 3 Industrial Drive	CITY Piedmont	STATE MO / ZIP CODE 63957

3. OWNER

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE
Ajinomoto Windsor, Inc.	Steve.charles@ajwin.com	(909) 477-4700
		FAX
ADDRESS (MAILING) 4200 Concours Street, Suite # 100	CITY Ontario	STATE CA / ZIP CODE 91764-4982

3.1 Request review of draft permit prior to public notice? ■ YES ☐ NO

4. CONTINUING AUTHORITY

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE
Same as Owner		FAX
ADDRESS (MAILING)	CITY	STATE / ZIP CODE

5. OPERATOR

NAME	CERTIFICATE NUMBER	TELEPHONE NUMBER WITH AREA CODE
Chuck Gentles	12050	(573) 223-7722
		FAX (573) 223-2412
ADDRESS (MAILING) # 2 Industrial Drive	CITY Piedmont	STATE MO / ZIP CODE 63957

6. FACILITY CONTACT

NAME	TITLE	TELEPHONE NUMBER WITH AREA CODE
Gary Cox	Maintenance Manager	(573) 223-7722
	E-MAIL ADDRESS Gary.Cox@ajiwin.com	FAX (573) 223-2412

7. ADDITIONAL FACILITY INFORMATION

7.1 Legal Description of Outfalls. (Attach additional sheets if necessary.)

001 ____¼ ____¼ Sec ____ T ____ R ____ ____ County
UTM Coordinates Easting (X): _ _ _ _ _ _ _ _ _ Northing (Y): _ _ _ _ _ _ _ _ _
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

002 ____¼ ____¼ Sec ____ T ____ R ____ ____ County
UTM Coordinates Easting (X): _ _ _ _ _ _ _ _ _ Northing (Y): _ _ _ _ _ _ _ _ _

003 ____¼ ____¼ Sec ____ T ____ R ____ ____ County
UTM Coordinates Easting (X): _ _ _ _ _ _ _ _ _ Northing (Y): _ _ _ _ _ _ _ _ _

004 ____¼ ____¼ Sec ____ T ____ R ____ ____ County
UTM Coordinates Easting (X): _ _ _ _ _ _ _ _ _ Northing (Y): _ _ _ _ _ _ _ _ _

7.2 Primary Standard Industrial Classification (SIC) and Facility North American Industrial Classification System (NAICS) Codes.
001 – SIC 2038 and NAICS 311412 002 – SIC _____ and NAICS _____
003 – SIC _____ and NAICS _____ 004 – SIC _____ and NAICS _____

8.	ADDITIONAL FORMS AND MAPS NECESSARY TO COMPLETE THIS APPLICATION (Complete all forms that are applicable.)		
A.	Is your facility a manufacturing, commercial, mining or silviculture waste treatment facility? If yes, complete Form C or 2F. (2F is the U.S. EPA's Application for Storm Water Discharges Associate with Industrial Activity.)	YES ☑	NO ☐
B.	Is application for storm water discharges only? If yes, complete Form C or 2F.	YES ☐	NO ☑
C.	Is your facility considered a "Primary Industry" under EPA guidelines: If yes, complete Forms C or 2F and D.	YES ☐	NO ☑
D.	Is wastewater land applied? If yes, complete Form I.	YES ☐	NO ☑
E.	Is sludge, biosolids, ash or residuals generated, treated, stored or land applied? If yes, complete Form R.	YES ☑	NO ☐
F.	If you are a Class IA CAFO, please disregard part D and E of this section. However, please attach any revision to your Nutrient Management Plan.		
F.	Attach a map showing all outfalls and the receiving stream at 1" = 2,000' scale.		

9.	DOWNSTREAM LANDOWNER(S) Attach additional sheets as necessary. See Instructions. (PLEASE SHOW LOCATION ON MAP. SEE 8.D ABOVE).			
NAME				
Adjacent landowners identified in Attachment A.				
ADDRESS		CITY	STATE	ZIP CODE

10. I certify that I am familiar with the information contained in the application, that to the best of my knowledge and belief such information is true, complete and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders and decisions, subject to any legitimate appeal available to applicant under the Missouri Clean Water Law to the Missouri Clean Water Commission.

NAME AND OFFICIAL TITLE (TYPE OR PRINT)	TELEPHONE NUMBER WITH AREA CODE
Pam Cox - General Manager	(573) 776-4257
SIGNATURE Pam Cox	DATE SIGNED 1-7-2016

MO 780-1479 (07-14)

BEFORE MAILING, PLEASE ENSURE ALL SECTIONS ARE COMPLETED AND ADDITIONAL FORMS, IF APPLICABLE, ARE INCLUDED.

Submittal of an incomplete application may result in the application being returned.

HAVE YOU INCLUDED:

- ☑ Appropriate Fees?
- ☑ Map at 1" = 2000' scale?
- ☑ Signature?
- ☑ Form C or 2F, if applicable?
- ☐ Form D, if applicable?
- ☐ Form I (Irrigation), if applicable?
- ☑ Form R (Sludge), if applicable?
- ☐ Revised Nutrient Management Plan, if applicable?

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION BRANCH

FORM C – APPLICATION FOR DISCHARGE PERMIT – MANUFACTURING, COMMERCIAL, MINING, SILVICULTURE OPERATIONS, PROCESS AND STORMWATER

FOR AGENCY USE ONLY	
CHECK NO.	
DATE RECEIVED	FEE SUBMITTED

NOTE: DO NOT ATTEMPT TO COMPLETE THIS FORM BEFORE READING THE ACCOMPANYING INSTRUCTIONS

1.00 NAME OF FACILITY

Ajinomoto Windsor, Inc. Wastewater Treatment Plant

1.10 THIS FACILITY IS NOW IN OPERATION UNDER MISSOURI OPERATING PERMIT NUMBER

MO0123552

1.20 THIS IS A NEW FACILITY AND WAS CONSTRUCTED UNDER MISSOURI CONSTRUCTION PERMIT NUMBER (COMPLETE ONLY IF THIS FACILITY DOES NOT HAVE AN OPERATING PERMIT).

2.00 LIST THE STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES APPLICABLE TO YOUR FACILITY (FOUR DIGIT CODE)

A. FIRST 2038 B. SECOND

C. THIRD D. FOURTH

2.10 FOR EACH OUTFALL GIVE THE LEGAL DESCRIPTION.

OUTFALL NUMBER (LIST) NA 1/4 1/4 SEC T R COUNTY

2.20 FOR EACH OUTFALL LIST THE NAME OF THE RECEIVING WATER

OUTFALL NUMBER (LIST)	RECEIVING WATER
NA	NA

2.30 BRIEFLY DESCRIBE THE NATURE OF YOUR BUSINESS

Ajinomoto Windsor, Inc. manufactures breaded and battered food products. Process wastewater is treated for suspended solids and hexane extractible material (oil & grease) removal. The permit modification application is for the land application of the sludge, which is generated from the wastewater treatment process (dissolved air flotation).

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent and treatment units labeled to correspond to the more detailed descriptions in item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, public sewers and outfalls. If a water balance cannot by determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures. Figure 1 is attached.

B. For each outfall, provide a description of 1. All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water and storm water runoff. 2. The average flow contributed by each operation. 3. The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO.	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT	
(LIST)	A. OPERATION (LIST)	B. AVERAGE FLOW (INCLUDE UNITS) (MAXIMUM FLOW)	A. DESCRIPTION	B. LIST CODES FROM TABLE A
NA - DAF sludge	Treatment of process WW.	Average Flow - 2940 gal/day	Land application	5-P
		Maximum Flow - 4646 gal/day		

2.40 CONTINUED

C. EXCEPT FOR STORM RUNOFF, LEAKS OR SPILLS, ARE ANY OF THE DISCHARGES DESCRIBED IN ITEMS A OR B INTERMITTENT OR SEASONAL?

☐ YES *(COMPLETE THE FOLLOWING TABLE)* ☑ NO *(GO TO SECTION 2.50)*

1. OUTFALL NUMBER *(list)*	2. OPERATION(S) CONTRIBUTING FLOW *(list)*	3. FREQUENCY		4. FLOW				C. DURATION *(in days)*
				A. FLOW RATE *(in mgd)*		B. TOTAL VOLUME (specify with units)		
		A. DAYS PER WEEK *(specify average)*	B. MONTHS PER YEAR *(specify average)*	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	4. LONG TERM DAILY	3. MAXIMUM AVERAGE	

2.50 MAXIMUM PRODUCTION

A. DOES AN EFFLUENT GUIDELINE LIMITATION PROMULGATED BY EPA UNDER SECTION 304 OF THE CLEAN WATER ACT APPLY TO YOUR FACILITY?

☐ YES *(COMPLETE B.)* ☑ NO *(GO TO SECTION 2.60)*

B. ARE THE LIMITATIONS IN THE APPLICABLE EFFLUENT GUIDELINES EXPRESSED IN TERMS OF PRODUCTION (OF OTHER MEASURE OF OPERATION)?

☐ YES *(COMPLETE c.)* ☐ NO *(GO TO SECTION 2.60)*

C. IF YOU ANSWERED "YES" TO B. LIST THE QUANTITY THAT REPRESENTS AN ACTUAL MEASUREMENT OF YOUR MAXIMUM LEVEL OF PRODUCTION, EXPRESSED IN THE TERMS AND UNITS USED IN THE APPLICABLE EFFLUENT GUIDELINE AND INDICATE THE AFFECTED OUTFALLS.

1. MAXIMUM QUANTITY			2. AFFECTED OUTFALLS *(list outfall numbers)*
A. QUANTITY PER DAY	B. UNITS OF MEASURE	C. OPERATION, PRODUCT, MATERIAL, ETC. *(specify)*	

2.60 IMPROVEMENTS

A. ARE YOU NOW REQUIRED BY ANY FEDERAL, STATE OR LOCAL AUTHORITY TO MEET, ANY IMPLEMENTATION SCHEDULE FOR THE CONSTRUCTION, UPGRADING OR OPERATION OF WASTEWATER TREATMENT EQUIPMENT OR PRACTICES OR ANY OTHER ENVIRONMENTAL PROGRAMS THAT MAY AFFECT THE DISCHARGES DESCRIBED IN THIS APPLICATION? THIS INCLUDES, BUT IS NOT LIMITED TO, PERMIT CONDITIONS, ADMINISTRATIVE OR ENFORCEMENT ORDERS, ENFORCEMENT COMPLIANCE SCHEDULE LETTERS, STIPULATIONS, COURT ORDERS AND GRANT OR LOAN CONDITIONS.

☐ YES *(COMPLETE THE FOLLOWING TABLE)* ☑ NO *(GO TO 3.00)*

1. IDENTIFICATION OF CONDITION AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
				A. REQUIRED	B. PROJECTED

B. OPTIONAL: YOU MAY ATTACH ADDITIONAL SHEETS DESCRIBING ANY ADDITIONAL WATER POLLUTION CONTROL PROGRAMS *(OR OTHER ENVIRONMENTAL PROJECTS WHICH MAY AFFECT YOUR DISCHARGES)* YOU NOW HAVE UNDER WAY OR WHICH YOU PLAN. INDICATE WHETHER EACH PROGRAM IS NOW UNDER WAY OR PLANNED, AND INDICATE YOUR ACTUAL OR PLANNED SCHEDULES FOR CONSTRUCTION.

☐ MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED.

3.00 INTAKE AND EFFLUENT CHARACTERISTICS

A. & B. SEE INSTRUCTIONS BEFORE PROCEEDING – COMPLETE ONE TABLE FOR EACH OUTFALL – ANNOTATE THE OUTFALL NUMBER IN THE SPACE PROVIDED.
NOTE: TABLE 1 IS INCLUDED ON SEPARATE SHEETS NUMBERED FROM PAGE 6 TO PAGE 7.

C. USE THE SPACE BELOW TO LIST ANY OF THE POLLUTANTS LISTED IN PART B OF THE INSTRUCTIONS, WHICH YOU KNOW OR HAVE REASON TO BELIEVE IS DISCHARGED OR MAY BE DISCHARGED FROM ANY OUTFALL. FOR EVERY POLLUTANT YOU LIST, BRIEFLY DESCRIBE THE REASONS YOU BELIEVE IT TO BE PRESENT AND REPORT ANY ANALYTICAL DATA IN YOUR POSSESSION.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
Not applicable			

3.10 BIOLOGICAL TOXICITY TESTING DATA

DO YOU HAVE ANY KNOWLEDGE OR REASON TO BELIEVE THAT ANY BIOLOGICAL TEST FOR ACUTE OR CHRONIC TOXICITY HAS BEEN MADE ON ANY OF YOUR DISCHARGES OR ON RECEIVING WATER IN RELATION TO YOUR DISCHARGE WITHIN THE LAST THREE YEARS?

☐ YES (IDENTIFY THE TEST(S) AND DESCRIBE THEIR PURPOSES BELOW.) ☑ NO (GO TO 3.20)

3.20 CONTRACT ANALYSIS INFORMATION

WERE ANY OF THE ANALYSES REPORTED PERFORMED BY A CONTRACT LABORATORY OR CONSULTING FIRM?

☑ YES (*LIST THE NAME, ADDRESS AND TELEPHONE NUMBER OF AND POLLUTANTS ANALYZED BY EACH SUCH LABORATORY OR FIRM BELOW.*) ☐ NO (*GO TO 3.30*)

A. NAME	B. ADDRESS	C. TELEPHONE *(area code and number)*	D. POLLUTANTS ANALYZED *(list)*
CAS Laboratories	525 North Eighth Street Salina, KS 67401	(785) 827-1273	TKN, ammonia, nitrate, HEM, Total phosphorus, chloride, SAR, pH, Ca, Mg, K, Na, C/N ratio, e-coli, fluoride, TSS, Al, As, Be, B, Cd, Cr, Cu, Pb, Mn, Hg, Mo, Ni, Se, Ag, Sn, Zn

3.30 CERTIFICATION

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED IN THIS APPLICATION AND ALL ATTACHMENTS AND THAT, BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THAT THE INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT.

NAME AND OFFICIAL TITLE (TYPE OR PRINT)	TELEPHONE NUMBER WITH AREA CODE
Pam Cox - General Manager	(573) 776-4257
SIGNATURE (SEE INSTRUCTIONS)	**DATE SIGNED**
Pam Cox	1-7-2016

PLEASE PRINT OR TYPE. You may report some or all of this information on separate sheet *(Use the same format)* instead of completing these pages.
SEE INSTRUCTIONS

FORM C
TABLE 1 FOR 3.00 ITEM A AND B

INTAKE AND EFFLUENT CHARACTERISTICS

OUTFALL NO. NA

PART A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE *(if available)*		C. LONG TERM AVRG. VALUE *(if available)*		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO. OF ANALYSES
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
A. Biochemical Oxygen Demand (BOD)	35700	1389	35700	1389	35700	856	see note 1	mg/L	lb/day			
B. Chemical Oxygen Demand (COD)	NA											
C. Total organic Carbon (TOC)	NA											
D. Total Suspended Solids (TSS)	405000	4822	160800	4822	114340	2741	544	mg/L	lb/day			
E. Ammonia *(as N)*	60	2.1	60	2.1	32.3	0.7	5	mg/kg	lb/day			
F. Flow	VALUE 4650		VALUE 4650		VALUE 2200		see note 2	gal/day		VALUE		
G. Temperature *(winter)*	VALUE 10		VALUE 10		VALUE 10		see note 3	°C		VALUE		
H. Temperature *(summer)*	VALUE 38		VALUE 38		VALUE 38		see note 3	°C		VALUE		
I. pH	MINIMUM 5.74	MAXIMUM 9.18	MINIMUM 5.74	MAXIMUM 9.18				STANDARD UNITS				

PART B – Mark "X" in column 2A for each pollutant you know or have reason to believe is present. Mark "X" in column 2B for each pollutant you believe to be absent. If you mark column 2A for any pollutant, you must provide the results for at least one analysis for that pollutant. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE *(if available)*		C. LONG TERM AVRG. VALUE *(if available)*		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
CONVENTIONAL AND NONCONVENTIONAL POLLUTANTS														
A. Bromide (24959-67-9)		X												
B. Chlorine, Total Residual		X												
C. Color		X												
D. Fecal Coliform		X												
E. Fluoride (16984-48-8)		X	< 0.25	< 0.01	< 0.25	< 0.01	< 0.25	< 0.005	1	mg/kg	lb/day			
F. Nitrate - Nitrate *(as N)*	X		7.1	0.08	7.1	0.08	1.2	0.02	29	mg/kg	lb/day			

PLEASE PRINT OR TYPE. You may report some or all of this information on separate sheet *(Use the same format)* instead of completing these pages.
SEE INSTRUCTIONS

FORM C
TABLE 1 FOR 3.00 ITEM A AND B

INTAKE AND EFFLUENT CHARACTERISTICS

OUTFALL NO. NA

PART A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE *(optional)*		
	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE *(if available)*		C. LONG TERM AVRG. VALUE *(if available)*		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO. OF ANALYSES
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
A. Biochemical Oxygen Demand (BOD)	35700	1389	35700	1389	35700	856	see note 1	mg/L	lb/day			
B. Chemical Oxygen Demand (COD)	NA											
C. Total organic Carbon (TOC)	NA											
D. Total Suspended Solids (TSS)	405000	4822	160800	4822	114340	2741	544	mg/L	lb/day			
E. Ammonia *(as N)*	60	2.1	60	2.1	32.3	0.7	5	mg/kg	lb/day			
F. Flow	VALUE 4650		VALUE 4650		VALUE 2200		see note 2	gal/day		VALUE		
G. Temperature *(winter)*	VALUE 10		VALUE 10		VALUE 10		see note 3	°C		VALUE		
H. Temperature *(summer)*	VALUE 38		VALUE 38		VALUE 38		see note 3	°C		VALUE		
I. pH	MINIMUM 5.74	MAXIMUM 9.18	MINIMUM 5.74	MAXIMUM 9.18			1 0	STANDARD UNITS				

PART B – Mark "X" in column 2A for each pollutant you know or have reason to believe is present. Mark "X" in column 2B for each pollutant you believe to be absent. If you mark column 2A for any pollutant, you must provide the results for at least one analysis for that pollutant. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE *(if available)*		C. LONG TERM AVRG. VALUE *(if available)*		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
CONVENTIONAL AND NONCONVENTIONAL POLLUTANTS														
A. Bromide (24959-67-9)		X												
B. Chlorine, Total Residual		X												
C. Color		X												
D. Fecal Coliform		X												
E. Fluoride (16984-48-8)		X	< 0.25	< 0.01	< 0.25	< 0.01	< 0.25	< 0.005	1	mg/kg	lb/day			
F. Nitrate - Nitrate *(as N)*	X		7.1	0.08	7.1	0.08	1.2	0.02	29	mg/kg	lb/day			

Notes:

1. DAF sludge BOD is estimated by conducting a mass balance between the wastewater treatment plant influent and effluent.
2. DAF sludge volumes are recorded each day that sludge is applied. The values presented herein are the maximum and average values generated from 2011 to 2015.
3. Temperature values are estimated.

1. POLLUTANT AND CAS NUMBER *(if available)*	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE *(optional)*		
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE *(if available)*		C. LONG TERM AVRG. VALUE *(if available)*		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
G. Nitrogen, Total Organic *(as N)*	X		4271	54.2	4271	54.2	1769	29.3	29	mg/kg	lb/day			
H. Oil and Grease	X		184000	2635	184000	2635	93500	1370	13	mg/kg	lb/day			
I. Phosphorus *(as P)*, Total (7723-14-0)	X		786	14.7	786	14.7	411	6.513	13	mg/kg	lb/day			
J. Sulfate *(as SO^4)* (14808-79-8)		X												
K. Sulfide *(as S)*		X												
L. Sulfite (as SO^3) (14265-45-3)		X												
M. Surfactants		X												
N. Aluminum, Total (7429-90-5)	X		7150	16.5	7150	16.5	4240	10.6	4	mg/kg*	lb/day			
O. Barium, Total (7440-39-3)		X												
P. Boron, Total (7440-42-8)		X												
Q. Cobalt, Total (7440-48-4)		X												
R. Iron, Total (7439-89-6)		X												
S. Magnesium, Total (7439-95-4)	X		155	2.9	155	2.9	80	1.4	19	mg/kg	lb/day			
T. Molybdenum, Total (7439-98-7)		X												
U. Manganese, Total (7439-96-5)	X		43.2	0.12	43.2	0.12	20.1	0.06	4	mg/kg*	lb/day			
V. Tin, Total (7440-31-5)	X		3.5	0.014	3.5	0.014	3.2	0.009	4	mg/kg*	lb/day			
W. Titanium, Total (7440-32-6)		X												

* - Denotes concentration presented on a dry weight basis.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	A. BELIEVED PRESENT	B. BELIEVED ABSENT	A. MAXIMUM DAILY VALUE		B. MAXIMUM 30 DAY VALUE (if available)		C. LONG TERM AVRG. VALUE (if available)		D. NO. OF ANALYSES	A. CONCEN-TRATION	B. MASS	A. LONG TERM AVRG. VALUE		B. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, AND TOTAL PHENOLS														
1M. Antimony, Total (7440-36-9)		X												
2M. Arsenic, Total (7440-38-2)		X	All ND						4					
3M. Beryllium, Total (7440-41-7)		X	All ND						4					
4M. Cadmium, Total (7440-43-9)		X	All ND						4					
5M. Chromium III (16065-83-1)	X		11.2	0.031	11.2	0.031	8	0.022	4	mg/kg*	lb/day			
6M. Chromium VI (18540-29-9)		X												
7M. Copper, Total (7440-50-8)	X		14.2	.039	14.2	.039	7.7	.022	4	mg/kg*	lb/day			
8M. Lead, Total (7439-92-1)	X		2.8	0.008	2.8	0.008	1.7	0.005	4	mg/kg*	lb/day			
9M. Mercury, Total (7439-97-6)		X	All ND						4					
10M. Nickel, Total (7440-02-0)	X		5.6	0.017	5.6	0.017	3.8	0.009	4	mg/kg*	lb/day			
11M. Selenium, Total (7782-49-2)		X	All ND											
12M. Silver, Total (7440-22-4)		X	All ND											
13M. Thallium, Total (7440-28-0)		X												
14M. Zinc, Total (7440-66-6)	X		213	0.59	213	0.59	123	0.34	4	mg/kg*	lb/day			
15M. Cyanide, Amenable to Chlorination		X												
16M. Phenols, Total		X												
RADIOACTIVITY														
(1) Alpha Total		X												
(2) Beta Total		X												
(3) Radium Total		X												
(4) Radium 226 Total		X												

* - Denotes concentration presented on a dry weight basis.

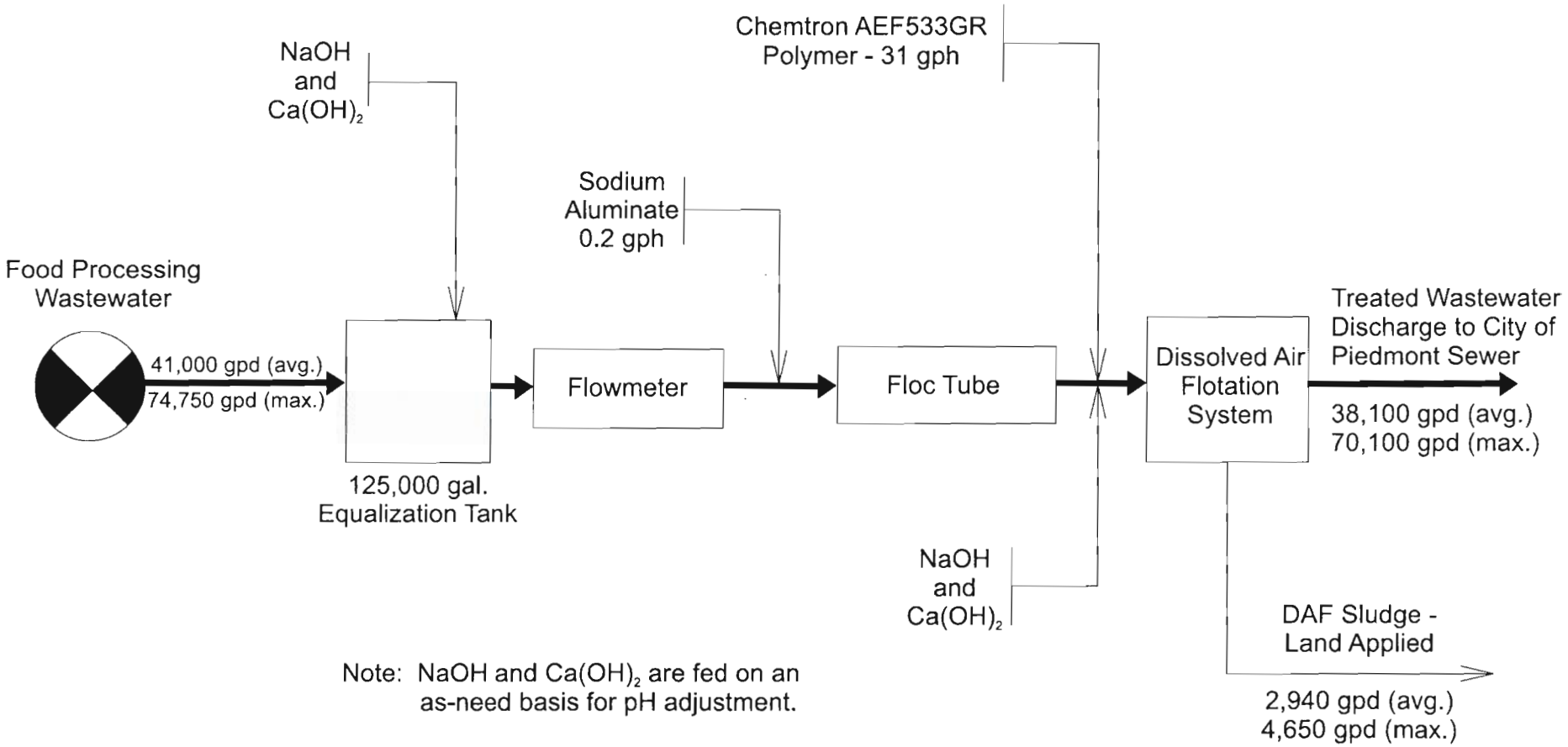

Figure 1: Ajinomoto Windsor, Inc.
Wastewater Treatment Block Flow Diagram
December, 2015

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Water Protection Program

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION BRANCH
(SEE MAP FOR APPROPRIATE REGIONAL OFFICE)

FORM R – PERMIT APPLICATION FOR LAND APPLICATION OF INDUSTRIAL WASTEWATER BIOSOLIDS AND RESIDUALS

FOR AGENCY USE ONLY
PERMIT NUMBER MO -
DATE RECEIVED

INSTRUCTIONS: FORMS A & C or F (CAFOs) (and D where applicable) must also be submitted for land application of industrial wastewater sludge biosolids or residuals. **Submit FORMS E and G** for land disturbance permit if construction areas total five acres or more.

Attach **FORM I**, if wastewater will be land applied or irrigated.

1.00 FACILITY INFORMATION

1.10 Facility Name
Ajinomoto Windsor, Inc. Wastewater Treatment Plant

1.20 Application for:
- ☐ Construction Permit (attach Engineering report, Plans and Specifications per 10 CSR 20-8.020)
- ☐ Operating Permit (if no construction permit, attach engineering documents)
  Date Land Application System Began Operation: _____
- ☑ Operating Permit Renewal

1.30 Months when the business or enterprise will operate or generate sludge or residuals:
■ 12 months per year ☐ Part of year (list Months): _____

1.40 List the Facility outfalls which will be applicable to the land application system from outfalls listed on Form A, C, D and F.
Outfall Nos. NA ___ ___ ___ ___ ___ ___ ___

2.00 STORAGE BASINS

2.10 Number of storage basins: 2 Type of basin: ☑ Steel ☐ Concrete ☐ Fiberglass ☐ Earthen
☐ Earthen with membrane liner

2.20 Storage basin dimensions at inside top of berm (feet): Report freeboard as feet from top of berm to emergency spillway or overflow pipe.
(Complete Attachment A: Profile Sketch)
Basin #1: Length _____ Width _____ Depth _____ Freeboard _____ Berm Width _____ % Slope _____
Basin #2: Length _____ Width _____ Depth _____ Freeboard _____ Berm Width _____ % Slope _____

2.21 Storage basin volumes (gallons): Permanent volume means two foot water depth for seal protection, and any required treatment volume capacity.
Basin #1: Gallons: _____ Permanent Volume + _____ Storage = _____ Total volume (gallons) See Attachment A.
Basin #2: Gallons: _____ Permanent Volume + _____ Storage = _____ Total volume (gallons)

2.30 Storage Basin operating levels (report as feet below emergency overflow level)
Basin #1: Maximum water level NA ft. Minimum operating water level _____ ft.
Basin #2: Maximum water level NA ft. Minimum operating water level _____ ft.

2.40 Storage Basin design storage capacity: (storage between minimum and maximum operating levels for 1-in10 year storm water flows.)
Basin #1: NA days Basin #2: ___ days Basin #3: ___ days

2.50 Attach Water Balance Test results to verify earthen basin seal in accordance with 10 CSR 20-8.020(13) and (16), when required by the department.

2.60 Attach a sludge management plan for materials that are not land applied.

2.70 Attach a closure plan for lagoons, storage basins and treatment units.

3.00 LAND APPLICATION SYSTEM

3.10 Number of application sites 5 Total Available Acres 310 Minimum & Maximum % field slopes _____
Location: ___ ¼ ___ ¼ ___ ¼ ___ Sec. ___ T ___ R _____ County ___ Acres See Table A-1.
Location: ___ ¼ ___ ¼ ___ ¼ ___ Sec. ___ T ___ R _____ County ___ Acres
Attach extra sheets as necessary.

3.12 Type of vegetation: ☐ Grass hay ☑ Pasture ☐ Timber ☑ Row crops ☐ Other (describe) _____
Specific Crops and Yields/acre: Goal: _____ Actual for last five years: _____ See Table A-1.

3.20 Annual sludge production (gallons per year): _____ Actual NA Design
(dry tons per year): 539 Actual NA Design
Human Population Equivalent: NA Actual NA Design

3.21 Land Application rate per acre:
Design: 2 dry ton/year 3.4 dry ton/application 177 No. applications/year
Actual: 2.4 dry ton/year 2.9 dry ton/application 177 No. applications/year
Total amount land applied each year (total all sites) Design 622 dry ton/year Actual 539 dry ton/year
Actual months used for land application: ☑ Jan ☑ Feb ☑ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec

3.22 Land Application Rate is based on:
☐ Nutrient Management Plan (N&P) ☑ PAN ☐ Conservative
☐ Hydraulic Loading ☐ Limiting Pollutant (Specify) _____
☐ Other (describe) _____

3.30 Equipment type: ☐ Tank wagon ☑ Tank truck ☐ Subsurface injection ☐ Slinger spreader ☐ Dry spreader
☐ Other (describe) _____
Equipment Capacity: 3680 (Gallons) (cubic feet) per hour 290 Total hours of operation per year

3.40 Public Use/Access Sites: If public use or access to land application site, describe pathogen treatment and site access restrictions. If human, animal, or organic wastes, refer to 40 CFR 503.32 for pathogen treatment methods. Attach extra sheets as necessary.
NA

3.50 Separation distance (in feet) from the outside edge of the biosolids application area to down gradient features: See Attachment A.
_____ Permanent flowing stream _____ Losing Stream _____ Intermittent (wet weather) stream _____ Lake or pond
_____ Property boundary _____ Dwellings _____ Water supply well _____ Other (describe) _____

3.60 SOILS INFORMATION: Use information from the County Soil Survey, NRCS, or professional soil scientist.
NOTE: On-site soils classification by a professional soil scientist may be required by the department where appropriate.
Soil Series Name _____ Depth of bedrock ____ Feet Depth to water table ____ Feet See Attachment A.
Soil Infiltration rate in inches/hour (in/hr) for most restrictive layer within the following soil depth ranges:
_____ In/hr for 0-12 inch soil depth _____ In/hr for 12-24 inch soil depth _____ In/hr for 24-60 inch soil depth

3.70 Attach Nutrient Management Plan (NMP) including calculations for plant available nitrogen (PAN) and other nutrients, crop requirements, crop yields and other management factors. Include USDA/NRCS phosphorus recommendations.

3.80 Geologic Investigation: _____ Date of most recent Geologic Report by Department's Division of Geology and Land Survey.

3.81 Ground Water Monitoring Wells: (Attach Groundwater Monitoring Plan when required by department)
☑ NONE ☐ EXISTING ☐ PLANNED NUMBER: ____ Monitoring Wells ____ Lysimeters

3.90 Attach a current copy of the Operation and Maintenance (O&M) Plan for the land application system. Date of O&M Plan: Dec. 2011

3.91 Attach a site map showing topography, storage basins, land application sites, property boundary, streams, wells, roads, dwellings and other pertinent features. See Attachment A.

3.92 Attach a facility sketch showing treatment units, storage basins, pipelines, application sites and other features.

4.00 INDUSTRIAL PROCESS INFORMATION

4.10 Brief description of treatment processes prior to land application and note any changes made in last five years. (Attach extra sheets as necessary.)

Sludge is produced from DAF treatment of process wastewater generated from Ajinomoto Windsor production processes.

4.11 Detailed description of industrial production processes. Also indicate any changes made in last five years. (attach extra sheets as necessary)

Ajinomoto Windsor manufactures breaded and battered food products. The process wastewater (primarily generated from cleanup operations) is treated for TSS and HEM removal using a dissolved air flotation system.

4.20 List of raw materials, chemicals, additives, products, and by-products (Attach extra sheets as necessary)

Ajinomoto Windsor manufactures breaded and battered food products. The DAF sludge that is land-applied, is generated in a wastewater treatment plant, which processes wastewater generated from plant operations and cleanup. The treatment process is designed to remove suspended solids and oil & grease that is present in the wastewater.

4.31 Attach following FORMS for wastewater to be land applied. Form C is attached.

FORM C or F is required for all applicants. Use Form F for CAFOs.

FORM D is required for those industries listed in the Form D instructions or when required by the department.

Use actual testing results within last 12 months. For new operations use testing results from other similar operations or from published literature.

4.32 Are there any listed hazardous wastes in the material to be land applied: ☐ YES ☑ NO (If YES, attach testing results)

4.40 A. Are any Pollutants listed in 40 CFR 268.40 believed to be present in detectable concentrations: ☐ YES ☑ NO

B Are any Pollutants listed in 10 CSR 20-7.031 believed to be present in detectable concentrations: ☑ YES ☐ NO

C. Are any Pollutants listed in EPA Process Design Manual for Land Treatment of Municipal Wastewater publication EPA-625/1-81-013, Table 4-5 and Table 4-16 believed present in detectable concentrations: ☑ YES ☐ NO

(Attach a copy of testing results for any pollutants that may be present in detectable concentrations.)

4.50 Environmental Assessment. Do any of the pollutants detected exceed the criteria for pollutant concentrations of limitations contained in the publications referenced in Section 4.40 of this form: ☐ YES ☑ NO

If YES, attach a copy of the Environmental Assessment as required in 10 CSR 20-8.020(3)(D).

5.00 SOIL TESTING RESULTS: Complete information for each pollutant listed and each land application site. Attach results of any other soil testing performed in the last 12 months. Soil sampling and testing should conform to University publication G9110, Sampling Your Soil for Testing; Soil Test Procedures for North Central Region (North Dakota Agricultural Experiment Bulleting 499-Revised); Methods of Soil Analysis, American Society of Agronomy, Inc.; Soil Testing and Plant Analysis, Soil Science Society of America, Inc.; EPA Methods; or other methods approved by the department. Attach extra sheets as necessary. See Attachment A - Table A-4 for soil test results.

Total area sampled is 202 acres. Each composite sample covers ____ acres. Each composite consists of 15-20 subsamples.

Sample depth: ☐ 0-6 inches ☐ 0-12 inches ☐ Other (describe) See Table A-4 Notes

Pollutant	Concentration (mg/kg or ppm)			Pounds/ Acre	No. Composite Samples	Sample Period
	Minimum	Maximum	Average			
Organic Nitrogen as N						
Ammonia Nitrogen as N						
Nitrate Nitrogen as N						
Phosphorus as P (Bray 1P)						
Exchangeable Sodium %						
Organic Matter (percent)						
Cation Exchange Capacity						
pH (standard units)						
Other pollutants present in the material to be land applied: (Attach extra sheets as necessary)						

6.00 LAND LIMITING CONSTITUENTS FOR LAND APPLICATION

6.10 Metals of Concern for Land Application. Complete information for each pollutant listed. Analysis results must be for "TOTAL METALS". (Do NOT use TCLP, dissolved, total recoverable or other extraction methods. Include all test results for the last 5 years and a minimum of 4 separate samples.

Pollutant (total metals)	Concentration (mg/kg dry weight)			Design LBS/ Acre/Year	Type of Samples	Number Samples	Sample Location	Sample Period
	Minimum	Maximum	Average					
Aluminum	1844	7150	4236	NA	Grab	4	DAF	2011-15
Arsenic	< 0.8	< 3	< 1.6	NA	Grab	4	DAF	2011-15
Beryllium	< 0.3	< 1.2	< 1	NA	Grab	4	DAF	2011-15
Cadium	< 0.3	< 1.1	< 0.7	NA	Grab	4	DAF	2011-15
Chromium	6	11.2	8	NA	Grab	4	DAF	2011-15
Copper	4.1	14.2	7.7	NA	Grab	4	DAF	2011-15
Fluoride	< 0.2	< 0.25	< 0.23	NA	Grab	2	DAF	2011-15
Lead	1	2.8	1.7	NA	Grab	4	DAF	2011-15
Manganese	7	43.2	20	NA	Grab	4	DAF	2011-15
Mercury	< 0.1	< 0.5	< 0.3	NA	Grab	4	DAF	2011-15
Molybdenum	< 0.8	< 3	< 2.2	NA	Grab	4	DAF	2011-15
Nickel	< 3	5.6	4.2	NA	Grab	4	DAF	2011-15
Selenium	< 0.8	< 3	< 2.2	NA	Grab	4	DAF	2011-15
Silver	< 0.8	< 3	< 2.2	NA	Grab	4	DAF	2011-15
Tin	3.3	< 6.7	4.8	NA	Grab	4	DAF	2011-15
Zinc	89	213	123	NA	Grab	4	DAF	2011-15

6.20 Major Pollutants of Concern for Land Application. Complete information for each pollutant listed. Include any other pollutants that are most limiting for determining land application rates. Attach extra sheets as necessary.

Organic Nitrogen as N	620	4271	1769	NA	Grab	29	DAF	2011-15
Ammonia Nitrogen as N	11.4	135	43	NA	Grab	29	DAF	2011-15
Nitrate Nitrogen as N	< 0.2	7.1	1.2	NA	Grab	29	DAF	2011-15
Total Nitrogen as N	640	4401	1813	NA	Grab	29	DAF	2011-15
Plant Available Nitrogen (PAN)	384	2641	1089	40	Grab	29	DAF	2011-15
Total Phosphorus as P	116	786	411	NA	Grab	29	DAF	2011-15
Boron	< 80	< 300	215	NA	Grab	4	DAF	2011-15
Chlorides	13.1	1630	369	NA	Grab	31	DAF	2011-15
Sodium	170	1210	515	NA	Grab	32	DAF	2011-15
COD	NA	NA	NA	NA	NA	NA	NA	NA
TPH	NA	NA	NA	NA	NA	NA	NA	NA
Total Suspended Solids	10300	405000	111585	NA	Grab	544	DAF	2011-15
Oil & Grease	26900	184000	93500	5000	Grab	13	DAF	2011-15
Sodium Absorption Ration (SAR)	0.6	19.4	4.5	NA	Grab	28	DAF	2011-15
pH (standard units)	4.65	9.18	NA	NA	Grab	10	DAF	2011-15

6.30 Other Limiting Pollutants for Land Application Rates. Specify any other pollutants that are most limiting for determining land application rates. Include any additional significant pollutants from Section 4 that is not already listed in Section 6.00. Attach extra sheets as necessary.

Pollutant	Concentration (mg/kg dry weight)			Design LBS/ Acre/Year	Type of Samples	Number Samples	Sample Location	Sample Period
	Minimum	Maximum	Average					

6.40 Requirements for Public Use Sites. Complete this if land application onto public use or public access sites or if material will be distributed for general public use. Fecal Coliform, Salmonella and Entric Virus must be tested if the biosolids include waste material from humans, animals, vegetables or organic matter.

Pollutant		Concentration (mg/kg dry weight)			Type of Samples	Number Samples	Sample Location	Sample Period
		Minimum	Maximum	Average				
Total Dioxin TEQ*								
* Required Only for public access sites. TEQ = Toxicity Equivalents for CDD and CDF isomers per EPA Publication EPA/625/3-89/016 and EPA method 1613. Detection limits must be less than 1.0 ppt.								
Fecal Coliform								
Salmonella								
Enteric Virus								
Other (specify)								

7.00 CERTIFICATION

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED IN THIS APPLICATION AND ALL ATTACHMENTS AND THAT BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THIS INFORMATION, I BELIEVE THAT THE INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE OR IMPRISSONMENT.

CONSULTING ENGINEER – Name, Official Title and Engineering Firm (TYPE OR PRINT)	TELEPHONE NUMBER (area code and number)
Leland Max Shepard, PE, President, Shepard Engineering, Inc.	(785) 488-3336
SIGNATURE Leland Max Shepard	DATE SIGNED 1/11/2016
OWNER OR AUTHORIZED REPRESENTATIVE – Name and Official Title (TYPE OR PRINT)	TELEPHONE NUMBER (area code and number)
Pam Cox - General Manager	(573) 776-4257
SIGNATURE Pam Cox	DATE SIGNED 1-7-2016

ATTACHMENT A

PERMIT RENEWAL APPLICATION

SUPPLEMENTAL INFORMATION

PERMIT NO. MO-0123552

Background.

This document has been prepared provide supplemental information required by MDNR Forms A, C, and R. This permit renewal application is being submitted as required by the existing permit (# MO-0123552) and in accordance with State of Missouri regulations. The existing permit regulates the land application of sludge that is generated from the Ajinomoto Windsor wastewater treatment plant. Sludge is generated from a dissolved air flotation (DAF) unit, which is part of the wastewater treatment plant (WWTP). The WWTP processes wastewater generated from a food production plant. The wastewater contains no human or animal waste. The existing permit regulates the land application of the DAF sludge.

As will be documented in more detail below, the permit renewal application identifies five (5) land application sites to be included in the permit (4 existing and 1 new):

1) Hawkins site (existing).
2) Hill site (existing).
3) Smith site (existing).
4) Sutton site (existing). Sludge has not yet been applied to this site.
5) Rose site (new).

A permit modification application was recently submitted to the MDNR, which included information for the addition of the Rose property as a land application site.

It should also be noted that two properties, which are included in the existing permit, will no longer be used as land application sites:

1) Tooke site.
2) Ruble/Savage site (was never used for sludge application).

FORM A – SECTION 9 – ADJACENT LANDOWNERS

Landowners, which are located adjacent to the proposed land application sites, are identified with respect to each of the five (5) land application sites, in a subsequent section of this document.

FORM R SUPPLEMENTAL INFORMATION

2.10. DAF sludge is stored in two (2) – 19,000 gallon, above ground storage tanks. The tanks are located within a concrete spill containment structure immediately adjacent to the WWTP building.

2.21. The steel storage tanks (2) are 19,000 gallons each.

3.10. Land Application Site Information. Figures A-1 to A-5 show the locations of the tracts of land, which are to be included in the permit. And, the following information is summarized in Table A-1 with respect to each tract shown on Figures A-1 to A-5:

1) Estimated useable acres (assumes 25 ft. buffer around perimeter of field).
2) Land use (crop or pasture).
3) Location (1/4, 1/4 - Section, Township, and Range).
4) Crop information – type and estimated yield information.

3.12. Type of Vegetation. The type of vegetation, the yield goal, and actual yield for the respective tracts are summarized in Table A-1.

3.20. Annual Sludge Production. The annual sludge production (1,095,500 gallons) represents the maximum sludge generation rate, which was generated over the most recent 12 month period (January, 2015 through December, 2015). Similarly, the annual sludge production in dry tons per year (539) represents the generation rate over that same time period (which also represents the maximum annual rate over the past five years).

3.21 Land Application Rate per Acre. The design and actual land application rates per acre are based on the following historical data:

The "design" application rates are based on allowable volumes than can be applied to the total available area of 311 acres with the following application rate limitations (specified by the current permit):

- PAN shall not exceed 40 lb/acre/year.
- Oil & grease shall not exceed 5,000 lb/acre/year

The "design" values were calculated using the average oil & grease (HEM), total Kjeldahl nitrogen (TKN), and nitrate concentrations generated from 2012 through 2015 and the 2015 DAF sludge generation volume (1,095,500 gallons). The concentration values (based on the 2012-2015 averages) are summarized below:

Oil & grease (HEM) – 71,670 mg/kg
TKN – 1810 mg/kg as N
Nitrate – 3 mg/kg as N

PAN is calculated from TKN and nitrate as follows:

PAN = (0.6) x (TKN) + (0.9) x (NO_3) = (0.6) x (1810) + (0.9) x (3) = 1089 mg/kg PAN as N

The "design" rate based on PAN loading is:

(40 lb PAN/acre/year)/[(1089 ppm) x (8.34 lb/MG-ppm)] x (1,000,000 gal/MG)

= 4,400 gal/acre/year

The design rate based on oil & grease loading is:

(5,000 lb HEM/acre/yr)/[(71,670 ppm)x(8.34 lb/MG-ppm)]x(1,000,000 gal/MG)

= 8,365 gal/acre/year

Therefore, based on the historical concentration data, PAN loading is the limiting factor with respect to land application of the DAF sludge.

The "design" land application rates in dry ton/acre/year and dry ton/application/acre are calculated using the average TSS concentrations from 2012 through 2015 and the maximum application rate calculated above (4,400 gal/acre).

(4400 gal/acre) x (0.89 lb/gal) x (1 ton/2000 lb)

= 2 dry tons/acre

In 2015, there were approximately 177 applications. Therefore, the estimated "design" dry tons per application is:

(4400 gal/acre) x (311 acres) x (0.89 lb/gal) x (1 ton/2000 lb)/(177 applications)

= 3.4 tons/application

It should be noted that the application rates in 2015 were greater than the "design" rates due to the fact that the TKN (and PAN) sludge concentrations were lower than historical averages. For example, the average 2015 TKN sludge concentration was 1380 mg/kg compared to the average TKN concentration from 2012 through 2015 of 1810 mg/kg. Thus, the sludge application rate could be (and was) increased in 2015 due to the lower nitrogen concentrations measured in the sludge in 2015.

3.60 Soils Information. Soil information for each of the five (5) application sites is included in the "Site Information Sheets", which are attached.

3.70 Nutrient Management Plan. As documented in earlier calculations, plant available nitrogen (PAN) is limited to 40 pounds per acre as N. The loading is managed and controlled by periodically measuring the total Kjeldahl nitrogen (TKN) and nitrate concentration of the sludge. PAN is then calculated by:

PAN (mg/kg) – (0.6) x (TKN) + (0.9) x (NO_3)

Application rates are then calculated and adjusted in order that the annual PAN loading does not exceed 40 lb/acre/year. If the PAN application rate for a given tract exceeds the 40 lb/acre/year target level, the application rate is adjusted in the subsequent year(s) such that the long-term average PAN loading rate does not exceed the 40 lb/acre/year level.

3.91 The site maps (Figures A-1 through A-5) show the topography, property boundaries for the land application sites, streams, wells, roads, and dwellings. No storage basins are located near the land application sites.

4.40 Pollutants. Tables A-2 and A-3 summarize chemical analysis parameters, sample dates, and concentrations for those constituents, which are identified in the following documents and have been analyzed with respect to the DAF sludge:

1) 10 CSR 20-7.031.
2) EPA-625/1-81-013 – Tables 4-5 and 4-16.

5.00 Soil Testing Results. 2014 and 2015 soil testing results for three (3) of the five (5) sites are summarized in Table A-4. Soil testing results are not included for the Sutton or the Rose property, as DAF sludge has not been applied to those sites.

HAWKINS PROPERTY SITE INFORMATION SHEET

Figure A-1 is a site topographic map.

1. Site No. 1:
   a. Size – 26 acres.
   b. Distance to:
      1) Nearest residence – 300 feet (residence is Jim Hawkins – sludge application contractor).
      2) Intermittent stream – 100 feet.
      3) Flowing stream – 200 feet.
      4) Nearest well – 1250 feet.
   c. Type of vegetation – soybeans.
   d. Ponds, surface water, sinkholes, etc. – none.
   e. Topography – 2 to 4 percent slope.
   f. Nearest neighbor to application site – Jim Hawkins, Patterson, Missouri.
   g. Soil type – mostly Haymond series, with Midco series in the southern part near Rings Creek).

2. Site No. 2:
   a. Size – 45 acres.
   b. Distance to:
      1) Nearest residence – 100 feet (residence is Jim Hawkins – sludge application contractor).
      2) Intermittent stream – 1000 feet.
      3) Flowing stream – 100 feet.
      4) Nearest well – 1000 feet.
   c. Type of vegetation – pasture for grazing beef cattle.
   d. Ponds, surface water, sinkholes, etc. – none.
   e. Topography – 7 to 10 percent slope.
   f. Nearest neighbor to application site – Steve Eaton, Patterson, Missouri.
   g. Soil type – Tract # 1 soil is a member of the Freeburg series, remaining tracts are Courtois series.

3. Site No. 3:
   a. Size – 21 acres.
   b. Distance to:
      1) Nearest residence – 750 feet.
      2) Intermittent stream – 1500 feet.
      3) Flowing stream – 100 feet.
      4) Nearest well – 1000 feet.
   c. Type of vegetation – soybeans.
   d. Ponds, surface water, sinkholes, etc. – none.
   e. Topography – 2 to 4 percent slope.
   f. Nearest neighbor to application site – Jim Hawkins, Patterson, Missouri.
   g. Soil type – western two-thirds of site is a member of the Haymond series; eastern portion is a member of the Midco series.

4. Site No. 4:
   a. Size – 23 acres.
   b. Distance to:
      1) Nearest residence – 50 feet (residence is Jim Hawkins – sludge application contractor; sludge is not spread within 100 feet of Mr. Hawkins' residence).
      2) Intermittent stream – 150 feet.
      3) Flowing stream – 100 feet.
      4) Nearest well – 100 feet.
   c. Type of vegetation – soybeans.
   d. Ponds, surface water, sinkholes, etc. – none.
   e. Topography – 2 to 4 percent slope.
   f. Nearest neighbor to application site – Jim Hawkins, Patterson, Missouri.
   g. Soil type – Northwest and north central regions of this site are members of the Haymond series. The east portion of the site is a complex of the Tilk and Secesh soil series. The southern portion of the site is a member of the Freeburg series. Finally, an area just east of the north central portion of the site is a member of the Elk series.

The soil on Site No. 1 and probably the extreme north and west part of Site No. 2 appears to be a member of the Fourche soil association. This thick soil has a silt loam texture and develops on moderately flat slopes.

The soil on most of Site No. 2 may be a member of either the Caneyville soil association or the Crider soil association. These thin soils generally have a silty clay texture and are developed on moderately sloping ground.

The soil on Site No. 3 and No. 4 is very similar to that which is present at Site No. 1.

HILL PROPERTY SITE INFORMATION SHEET

1. Land Application Adjacent Land Owners.

Name	Street	City/State/Zip
Linda Biederer	Rt. 1, Box 1757	Piedmont, MO 63957
Mike Hill	Rt. 1, Box 1728	Piedmont, MO 63957
Steven Whitley	Rt. 1, Box 1728	Piedmont, MO 63957
Sue Hill	Rt. 1, Box 1726	Piedmont, MO 63957
Mike Warren	Rt. 1, Box 252	Piedmont, MO 63957
Mildred Phillips	Rt. 1, Box 1720	Piedmont, MO 63957
Caroline Million	Rt. 1, Box 1718	Piedmont, MO 63957
Craig Amerlan	Rt. 1, Box 834A	Piedmont, MO 63957
Rose Bridges	Rt. 1, Box 1764	Piedmont, MO 63957

2. One (1)" = 2000' Scale Topographic Map – map is attached (Figure A-2).

.

3. Legal Description of Site.

All that part of the South half of the SE ¼ of Section 18, Township 28 North, Range 5 East of the Fifth Principal Meridian, Wayne County, Missouri and being furthered described as follow: Beginning at the Southeast corner of said Section; then, North 89 ° 19' West along and with the South line of said Section a distance of 647.6 feet to the thread of Lake Cree; thence, along and with the meanders of said thread a chord bearing of North 45 ° 33' West and a chord distance of 1513.8 feet to the easterly right-of-way line of County Road 361; thence, along and with said right-of-way line with the following courses and distances: North 44 ° 52' East a distance of 52.9 feet; thence, North 37 ° 33' East a distance of 52.3 feet; thence, North 34 ° 14' East a distance of 93.1 feet; thence, North 30 ° 19' East a distance of 30.4 feet; thence, North 22 ° 11' East a distance of 72.1 feet; thence, leaving said right-of-way line South 89 ° 39' East a distance of 1802.3 feet to the East line of said Section; thence South 00 ° 04' West along and with said line a distance of 1378.5 feet to the Point of Beginning, containing 43.00 acres, more or less, and being subject to easements and rights-of-way.

4. Area.

Useable Area – 27 acres.

5. Name and Address of Nearest Resident to Property.

Linda Biederer
Rt. 1, Box 1757
Piedmont, MO 63957

6. Distance to Nearest Intermittent Stream.

100 ft.

7. Distance to Nearest Flowing Stream.

100 ft.

8. Distance to Nearest Water Well.

No wells are located on the property.

9. Land Use.

Pasture.

10. Identification of Pond or Surface Water on Property.

None.

11. Slope of Land.

Flat – where sludge would be applied.

12. Soil Type.

Clarksville.

13. Recent Soil Chemical Analysis Data.

See Table A-4.

14. Equipment that Would be Used to Apply Sludge.

Vacuum Truck – operated by: Jim Hawkins
Route 1, Box 20
Patterson, MO 63956

Mr. Hawkins is the sludge application contractor and land owner for the land that is included in the existing Windsor Foods Sludge Application permit.

The land owner is: Robert Hill
Route 1, Box 28
Patterson, MO 63956

Mr. Hawkins and Mr. Hill entered into a lease agreement on March 1, 2011.

SMITH PROPERTY SITE INFORMATION SHEET

1. Land Application Adjacent Land Owners.

Name	Street	City/State/Zip
Russell Green	RR 1 Box 1803	Piedmont, MO 63957
Robert Arnett	RR 1 Box 1797	Piedmont, MO 63957
Joseph Difami, Sr.	4131 Tyrolean	St. Louis, MO 63116
Charles Ezell	RR 1 Box 58	Patterson, MO 63956
Joyce Clyburn	RR 1 Box 31	Patterson, MO 63956
Jason Smith	RR 1 Box 33	Patterson, MO 63956

2. One (1)" = 2000' Scale Topographic Map – map is attached (Figure A-3).

3. Legal Description of Site.

All of the Southwest Quarter of the Northeast Quarter, and all of that part of the Southeast Quarter of the Northwest Quarterly lying East of Highway U; and all that part of the Northeast Quarter of the Southwest Quarter, lying East of Highway U; All of above land lying and being in Section 36, Township 29 North, Range 4 East, Wayne County, Missouri.

4. Area.

Estimated useable area – 60 acres.

5. Name and Address of Nearest Resident to Property.

Jason Smith
RR 1 Box 33
Patterson, MO 63956

6. Distance to Nearest Intermittent Stream.

½ mile

7. Distance to Nearest Flowing Stream.

½ mile

8. Distance to Nearest Water Well.

Located at SW corner of property. Sludge would be applied no less than 200 ft. from well.

9. Land Use.

Pasture.

10. Identification of Pond or Surface Water on Property.

Pond located at SE corner of property.

11. Slope of Land.

Less than 5 percent – where sludge would be applied.

12. Soil Type.

Clarksville.

13. Recent Soil Chemical Analysis Data.

See Table A-4.

14. Equipment that Would be Used to Apply Sludge.

Vacuum Truck – operated by: Jim Hawkins
Route 1, Box 20
Patterson, MO 63956

Mr. Hawkins is the sludge application contractor and land owner for the land that is included in the existing Windsor Foods Sludge Application permit.

The land owner is:

Jason Smith
RR 1 Box 33
Patterson, MO 63956

Mr. Hawkins and Mr. Smith entered into a lease agreement on March 29, 2011.

SUTTON SITE INFORMATION SHEET

1. Land Application Adjacent Land Owners.

Name	Street	City/State/Zip
Tyman Kimes	1212 Hwy CC	Piedmont, MO 63957
James Sutton	1155 Hwy CC	Piedmont, MO 63957
Ellen Scaggs	6206 Main	Benton, IL 62812
Michael Morris II	682 Hwy CC	Piedmont, MO 63957
Clara Beeler	668 Hwy CC	Piedmont, MO 63957
Mollet Living Trust	4327 Brantleigh Hts. Ct.	St. Louis, MO 63128
BBF, Inc.	PO Box 730	Reynolds, MO 63666
Grant Lang	9 Timberwood Dr.	Maryville, IL 62062

2. 1" = 2000' Scale Topographic Map – Figure A-4 is attached.

3. Legal Description of Site.

SW ¼, SW ¼, Sec. 29, T30N, R3E, Reynolds County
SE ¼, SE ¼, Sec. 30, T30N, R3E, Reynolds County
NE ¼, NE ¼, Sec. 31, T30N, R3E, Reynolds County
NW ¼, NW ¼, Sec. 32, T30N, R3E, Reynolds County

4. Area.

Estimated useable area – 38 acres.

5. Name and Address of Nearest Resident to Property.

Sheri Hefley 1060 HWY CC Piedmont, MO 63957

6. Distance to Nearest Intermittent Stream.

Intermittent (un-named) stream is located on property.

7. Distance to Nearest Flowing Stream.

Approximately 2 miles.

8. Distance to Nearest Water Well.

A well is located on the property.

9. Land Use.

Idle for past several years – primarily fescue grass.

10. Identification of Pond or Surface Water on Property.

Two ponds are located on the property – along the field edges.

11. Slope of Land.

0 to 3 % where sludge would be applied.

12. Soil Type.

Tilk-Secesh complex – typical loam profile.

13. Recent Soil Chemical Analysis Data.

Soil samples have not been collected in recent years.

14. Equipment that Would be Used to Apply Sludge.

Vacuum Truck – operated by:

Midwest Pumping and Portables, LLC.
Rt. 2, Box 2525, Piedmont, MO 63957

The land owner is:

Mike Sutton
Rt. 2
Box 2541
Piedmont, MO 63957

Mr. Sutton is the owner of Midwest Pumping and Portables, LLC.

ROSE SITE INFORMATION SHEET

1. Land Application Adjacent Land Owners.

Name	Street	City/State/Zip
Thomas Willis	Rt. 1, Box 12100	Patterson, MO 63956
Jerry & Sylvia Rose	Rt. 1, Box 12080	Patterson, MO 63956
Brown Family Revocable Living Trust	417 Tiffin	Ferguson, MO 63135
Ernest & Brenda Green	Rt. 1, Box 12250	Patterson, MO 63956

2. One (1)" = 2000' Scale Topographic Map – map is attached (Figure A-5).

3. Legal Description of Site. See attached Exhibit "A".

4. Area. Estimated useable area – 70 acres.

5. Name and Address of Nearest Resident to Property.

Rodger Rose (property owner)
Rt. 1, Box 11900
Patterson, MO 63956

6. Distance to Nearest Intermittent Stream. 50 ft.

7. Distance to Nearest Flowing Stream. 100 ft.

8. Distance to Nearest Water Well. 160 ft.

9. Land Use. Information provided in Table A-1.

10. Identification of Pond or Surface Water on Property. Pond located north of Section 2 (see Figure A-5).

11. Slope of Land. Two (2) to five (5) percent – where sludge would be applied.

12. Soil Type.

The soil type is primarily a Marquand silt loam with a 2 to 5 % slope. This information was provided by the sludge application contractor and was confirmed by a review of information provided by the "Soil Survey of Wayne County, Missouri", NRCS.

The Wayne County Soil Survey also provided the following general information with respect to Marquand Silt Loam soil type:

- Depth to bedrock: Very deep (more than 60 inches).
- Drainage class: Moderately well-drained.
- Permeability: Moderately slow (0.2 to 0.6 inches per hour).
- Depth to water table: 24 to 30 inches.

13. Recent Soil Chemical Analysis Data.

The site has not yet been used for DAF sludge application.

14. Equipment that Would be Used to Apply Sludge.

Vacuum Truck – operated by: Jim Hawkins
Route 1, Box 20
Patterson, MO 63956

Mr. Hawkins is the sludge application contractor and land owner for the land that is included in the existing Windsor Foods Sludge Application permit.

The land owner is:

Rodger Rose
Rt. 1, Box 11900
Patterson, MO 63956

File No.: 4382

Exhibit "A"

Tract III:

A strip of land 100 yards wide off of the West side of the Southwest Quarter of the Southwest Quarter of Section Four (4). ALSO, all of the Southeast Quarter of the Southeast Quarter of Section Five (5) EXCEPT a part thereof heretofore deeded to Claude Allen: Excepted part being described as follows: Commencing at the Northwest corner of said Southeast Quarter of the Southeast Quarter; thence East 60 rods; thence in a Southerly direction to a point on the line of said Quarter-Quarter 40 rods East of the Southwest corner thereof; thence West to the Southwest corner of said Quarter-Quarter; thence North to the place of beginning. That part of the Southeast Quarter of the Southeast Quarter of Section Five (5) hereto intended to be conveyed; ALSO, all of the Northeast Quarter of the Northeast Quarter of Section Eight (8); ALSO, all of that part of the Northwest Quarter of the Northwest Quarter of Section Nine (9) lying South and West of Lick Branch; ALSO, commencing at the Northwest corner of the Northwest Quarter of the Northwest Quarter of Section Nine (9) in the little branch or creek known as Lick Branch; thence in a Southeasterly direction down said branch a distance of about 100 yards to middle of lane; thence Northerly up said lane to the Section line; thence West to the place of beginning. All of the above described lands being in Township Twenty-eight (28) North, Range Five (5) East.

Tract IV:

All that part of the Northwest Quarter of the Northwest Quarter of Section Nine (9) in Township Twenty-eight (28) North, Range Five (5) East that lies North and East of Lick Branch, excepting therefrom about two acres in the Northwest corner thereof heretofore deeded to Aaron Bean and now owned by William Lane.

ALSO, all that part of the Southwest Quarter of the Southwest Quarter of Section Four (4) in Township Twenty-eight (28) North, Range Five (5) East lying East of the 9 acre tract of land heretofore conveyed out of said 40 and along the West side thereof to William Lane.

ALSO, all of that part of the East Half of the Northwest Quarter of Section Nine (9) in Township Twenty-eight (28) North, Range Five (5) East that lies West of Big Lake Creek and South of the West fork of Big Lake Creek; also all of that part of the East Half of the Northwest Quarter of Section Nine (9) in Township Twenty-eight (28) North, Range Five (5) East that lies West of Big Lake Creek and North of the Greenville and Piedmont public road.

ALSO, all of that part of the East Half of the Northwest Quarter of Section Nine (9) in Township Twenty-eight (28) North, Range Five (5) East that lies West of Big Lake Creek and South of the Greenville and Piedmont public road, and North of the West Fork of Big Lake Creek.

ALSO, all that part of the Northeast Quarter of the Northwest Quarter of Section Nine (9), Township Twenty-eight (28) North, Range Five (5) East, that lies North and West of Big Lake Creek, except that part so situated already belonging to grantees herein; the part hereby conveyed being ten acres, more or less, and lying in the Northeast corner of said forty.

EXCEPT: Three (3) acres, more or less, located in the Northwest Quarter of the Northwest Quarter of Section 9, Township 28 North, Range 5 East, in Wayne County, Missouri, more particularly described as follows: Begin at the intersection of the South right of way line of County Road 378 and the East right of way line of County Road 372; thence South 180 feet along the East right of way line of County Road 372; thence West to the center line of County Road 372 to the Point of Beginning; thence in a Southerly direction along said center line to the intersection of the center line of Lick Creek; thence meandering Northerly along the center line of Lick Creek 460 feet to a point; thence leaving said Creek, North 70 feet to a point; thence Easterly to the Point of Beginning.

Tract V:

All that part located in the Northwest Quarter of the Northwest Quarter of Section 9, Township 28 North, Range 5 East, in Wayne County, Missouri, more particularly described as follows: Begin at the intersection of the South right of way line of County Road 378 and the East right of way line of County Road 372; thence South 180 feet along the East right of way line of County Road 372; thence West to the center line of County Road 372 to the Point of Beginning; thence in a Southerly direction along said center line to the intersection of the center line of Lick Creek; thence meandering Northerly along the center line of Lick Creek 460 feet to a point; thence leaving said Creek, North 70 feet to a point; thence Easterly to the Point of Beginning.

Tract VI:

All that part of the Southeast Quarter (¼) of the Southwest Quarter (¼) of Section 4 and a part of the Northwest Quarter (¼) of the Northeast Quarter (¼) of Section 9, Township 28 North, Range 5 East of the Fifth Principal Meridian, Wayne County,

Missouri, which is described as follows:
Commencing at the Beginning at a point for the Quarter Section Corner between Sections 4 and 9 as shown on the field notes of survey by the U.S. Department of Interior, Bureau of Land Management completed March 15, 1990; thence, South 88°46' West (bearings being referred to Grid North, Missouri State Plan Coordinate System, East Zone) along and with the section line a distance of 1352.4 feet; thence, North 01°17' East along and with the West line of the Southeast Quarter of the Southwest Quarter of Section 4 a distance of 1348.6 feet; thence, South 88°59' East along and with the North line of the Southeast Quarter of the Southwest Quarter a distance of 124.2 feet to an aluminum monument; thence, South 04°26' West a distance of 1262.7 feet; thence, North 87°54' East along a distance 1408.2 feet; thence, South 00°51' East a distance of 945.1 feet; thence, South 76°50' West along and with the center line of a County Road a distance of 145.9 feet to a point of the West line of the Northeast Quarter of said Section 9; thence, North 01°08' East a distance of 810.4 feet to the Point of Beginning.

[redacted]

TABLE A-1: LAND APPLICATION SITE TRACT INFORMATION SUMMARY

Property Owner	Tract Number	Useable Acres	Land Use	Location						Crop Information		
											Yield - bushels/acre	
				1/4	1/4	1/4	Section	Township	Range	Type	Goal	Actual
Hawkins	1	25.7	Crop		SW	NW	19	29N	5E	Soybeans	50	50
	2	45	Pasture		SW	NE	19	29N	5E	NA	NA	NA
				and	NW	SE	19	29N	5E		NA	NA
	3	21.4	Crop		SE	NW	19	29N	5E	Soybeans	50	50
	4	23.4	Crop		SE	NW	19	29N	5E	Soybeans	50	50
Hill	1 and 2	27	Pasture		SE	SE	18	28N	5E	NA	NA	NA
Smith	1 through 6	60	Pasture		SW	NE	36	29N	4E	NA	NA	NA
					SE	NE						
					NE	SE						
					SE	SE						
					SE	SE						
					NW	SE						
Sutton	NA	38	Pasture		SE	SW	29	30N	3E	NA	NA	NA
					NW	NW	32	30N	3E			
Rose	1	24.6	Crop	NE	NE	NE	8	28 North	5 East	Soybeans/milo	64/89	64/89
				NW	NW	NW	9	28 North	5 East			
	2	12.5	Pasture	NE	NW	NW	9	28 North	5 East	NA	NA	NA
	3	11.2	Pasture	SE	NW	NW	9	28 North	5 East	NA	NA	NA
	4	13.5	Crop	SW	SW	SW	4	28 North	5 East	Soybeans/milo	64/89	64/89
				SE	SE	SE	5	28 North	5 East			
				NW	NW	NW	9	28 North	5 East			
	5	8.6	Pasture	NW	NW	NW	9	28 North	5 East	NA	NA	NA
	Total:	311.0										

TABLE A-2: AJINOMOTO WINDSOR DAF SLUDGE CONCENTRATION DATA - METALS AND FLUORIDE

Parameter	Units	Sample Date			
		9/13/2011	9/13/2012	9/3/2013	9/3/2015
Aluminum	mg/kg	4920	7150	1844	3030
Arsenic	mg/kg	< 3	< 0.8	< 2.8	< 2
Beryllium	mg/kg	< 1	< 0.3	< 1.2	< 0.6
Boron	mg/kg	< 300	< 80	< 279	< 200
Cadmium	mg/kg	< 1	< 0.3	< 1.1	< 0.6
Chromium	mg/kg	7	7.7	11.2	6
Copper	mg/kg	4.07	7.08	14.2	5.4
Fluoride	mg/kg	NA	NA	< 0.2	< 0.25
Lead	mg/kg	2	1	2.8	1
Manganese	mg/kg	7	9.1	43.2	21
Mercury	mg/kg	< 0.1	< 0.1	< 0.42	< 0.5
Molybdenum	mg/kg	< 3	< 0.8	< 2.8	< 2
Nickel	mg/kg	< 3	3	5.6	5
Selenium	mg/kg	< 3	< 0.8	< 2.8	< 2
Silver	mg/kg	< 3	< 0.8	< 2.8	< 2
Tin	mg/kg	< 6.7	3.3	< 5.6	3.5
Zinc	mg/kg	89.6	99.9	213	89

Table A-2 Notes:
1. With the exception of fluoride, all concentrations are reported on a dry weight basis.

TABLE A-3: AJINOMOTO WINDSOR DAF SLUDGE CONCENTRATION DATA - CHLORIDE, SODIUM AND SAR

Sample Date	Concentrations		
	Chloride (mg/kg)	Sodium (mg/kg)	SAR Unitless
11/3/2015	280	NA	NA
10/1/2015	320	300	1.5
7/6/2015	135	290	1.1
4/16/2015	188	170	0.6
1/19/2015	174	300	2.0
10/1/2014	207	320	1.2
7/24/2014	235	220	0.9
4/7/2014	114	290	1.8
1/20/2014	237	410	1.7
1/2/2014	158	310	1.6
10/15/2013	168	480	1.7
7/2/2013	167	520	4.6
4/3/2013	190	400	3
3/5/2013	NA	520	2.4
2/7/2013	NA	610	5.0
1/7/2013	224	800	6.4
12/6/2012	289	NA	2.5
11/6/2012	13.1	460	3.3
9/13/2012	1510	755	6.8
8/13/2012	1630	NA	NA
7/23/2012	737	760	3.2
4/30/2012	210	770	9.7
3/19/2012	NA	900	4.9
1/10/2012	494	580	3.2
10/6/2011	1300	1210	17.8
9/13/2011	150	300	3.9
8/24/2011	NA	1200	19.4
7/28/2011	162	400	6.4
5/4/2011	170	290	2.5
3/1/2011	121	330	6.0

Table A-3 Notes:
1. Concentrations are reported on an as-received basis.

TABLE A-4: AJINOMOTO WINDSOR DAF SLUDGE LAND APPLICATION SITES - SOIL CONCENTRATION DATA

					Sample Date - October 23, 2014					
	Nitrate as N - mg/kg		Nitrate as N - mg/kg		pH	percent organic	cation exchange capacity	exchangeable sodium	available phosphorus as P	Composite Sample Area
Sample ID	4/9/14	10/23/14	4/28/15	10/28/15	(S.U.)	matter	(meq/100g)	percentage	(ppm)	(acres)
Smith Site # 1	1.8	2.3	3.4	1.4	4.8 - 5.9	2.6	7.8	0.6	7.5	10
Smith Site # 2	6.5	2.1	1.1	4.5	5.1 - 5.2	2.8	8.2	0.55	6.8	10
Smith Site # 3	1.9	0.9	1.2	10.1	6.1	1.8	6.4	0.6	3	10
Smith Site # 4	6.6	2.2	12.7	10.3	4.7 - 6.2	2.2	7	0.7	4.2	10
Smith Site # 5	0.7	1.7	2.1	0.7	4.4 - 4.5	2.2	7.3	0.55	3.2	10
Smith Site # 6	0.9	1.4	2.6	0.5	4.4 - 4.5	2	7.3	0.4	5.8	10
Hill Site # 1	2.6	5.5	5.6	4.9	6.8 - 7	2.9	7.8	0.8	9.2	13.5
Hill Site # 2	2.5	5.8	5.8	4.9	6.8 - 7	2.7	7.2	0.9	5.5	13.5
Hawkins Site # 1	14.4	7.0	5.5	9.4	4.9 - 5	2.6	7.4	0.85	7.8	12.8
Hawkins Site # 2	11.1	6.9	4.7	8.8	4.8 - 5.2	2.6	8	0.7	5	12.8
Hawkins Site # 3	9.6	9.4	3.7	8.6	4.8 - 5	2.4	7.2	0.75	30	10.7
Hawkins Site # 4	10.7	5.8	4.7	7.7	4.8 - 4.9	2.6	7.8	0.75	30	10.7
Hawkins Site # 5	3.8	3.4	7.3	6.4	4.7	2.4	8	0.5	4.8	7.8
Hawkins Site # 6	3.9	3.2	7.3	6.3	4.7	2.4	7.6	0.55	5.8	7.8
Hawkins Site # 7	5.1	5.2	6.5	7.2	6.7 - 6.8	2.4	6.9	1	27.2	7.8
Hawkins Site # 8	2.2	2.3	4.9	7.7	5.4 - 5.5	3	3.8	0.6	3	4
Hawkins Site # 9	4.2	4.6	3.4	33.6	5.1 - 6	3.1	8.3	0.9	4.1	14.2
Hawkins Site # 10	5.7	2.4	3.9	184.6	6 - 6.9	2.6	11.9	1	4.1	13.9
Hawkins Site # 11	5.1	4.8	3.3	4.3	3.5 - 5.8	2.8	11.4	15.4	3.2	12.9
Rose Site # 1	NA	NA	NA	NA	5.1	1.8 - 1.9	7.2 - 7.6	NA	9.5 - 10	29
Rose Site # 2	NA	NA	NA	NA	5.8	1.9	8.3	NA	10.5	12
Rose Site # 3	NA	NA	NA	NA	6.0	2.0	7.8	NA	16	12

Table A-4 Notes:

1) Analyses completed by University of Missouri Soil Testing Laboratory, Columbia, MO,

2) With the exception of the Rose property sample, soil samples collected by Windsor Foods Personnel in accordance with MU Guide G 9215..

3) Soil samples for nitrate analysis collected from a 0 to 12 inch depth.

4) Soil samples for analysis of other parameters collected from a 0 to 6 inch depth.

5) Rose soil samples collected on February 2, 2015.

Base Map Source: USGS Topographic Map - Patterson, MO
Contour Interval = 20 feet
Section 19 is in Township 29 North Range 5 East.

Base Map Date: 2015

N

1000 0 1000 2000 3000

Scale (feet)

Figure A-1:
Hawkins Property Site Map
Ajinomoto Windsor DAF Sludge Land Application

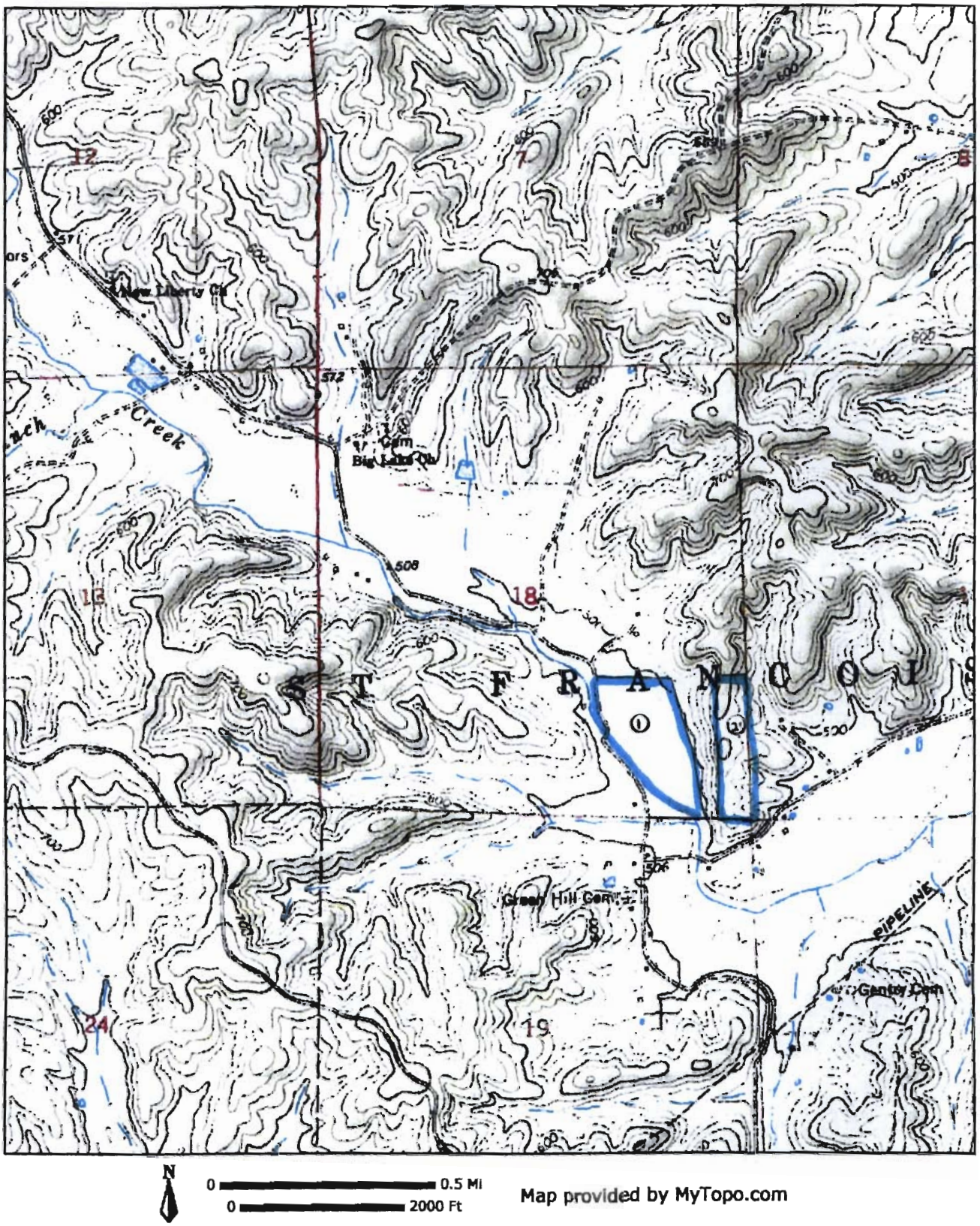


Figure A-2:

Hill Property Site Map

Ajinomoto Windsor DAF Sludge Land Application

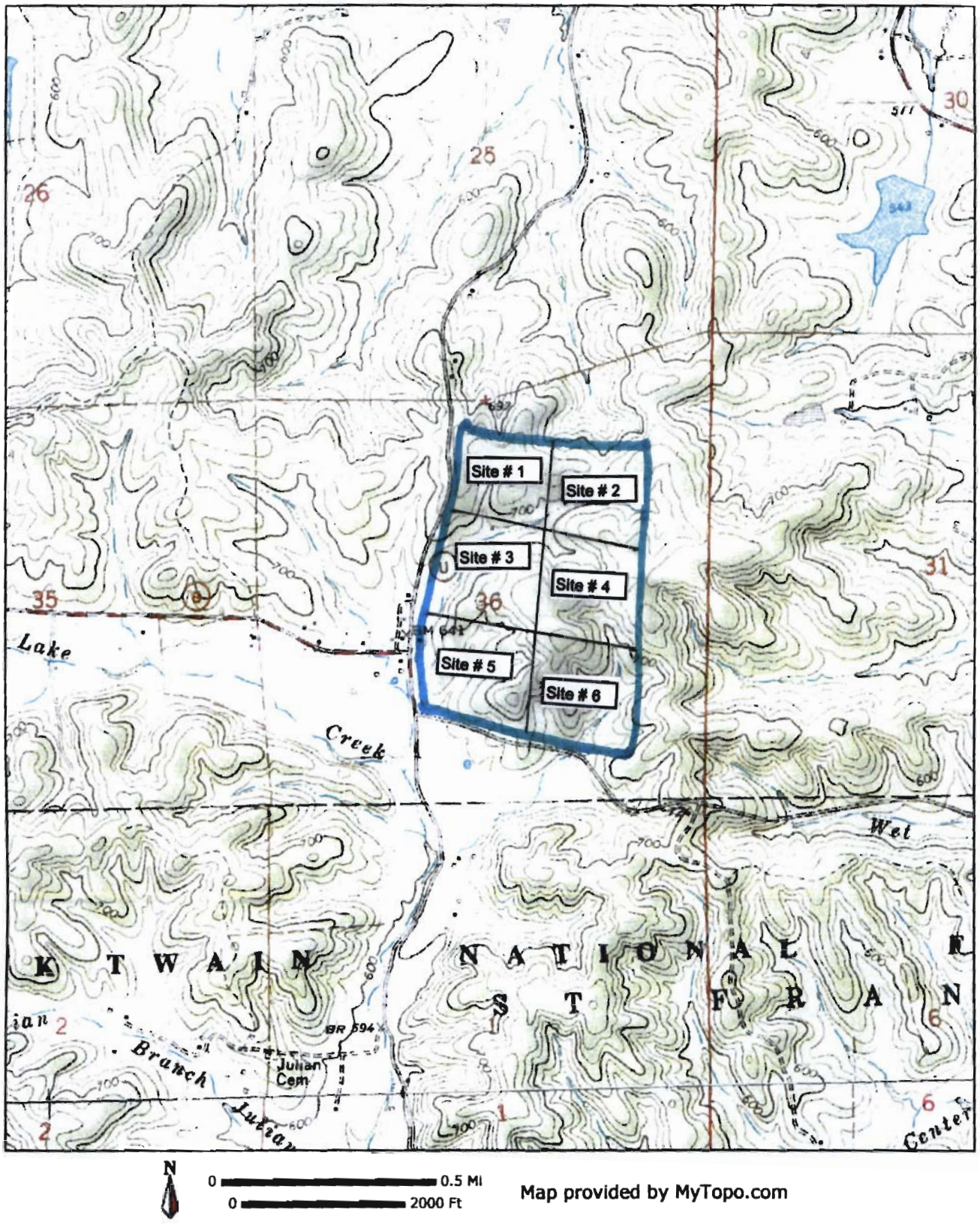


Figure A-3:

Smith Property Site Map

Ajinomoto Windsor DAF Sludge Land Application

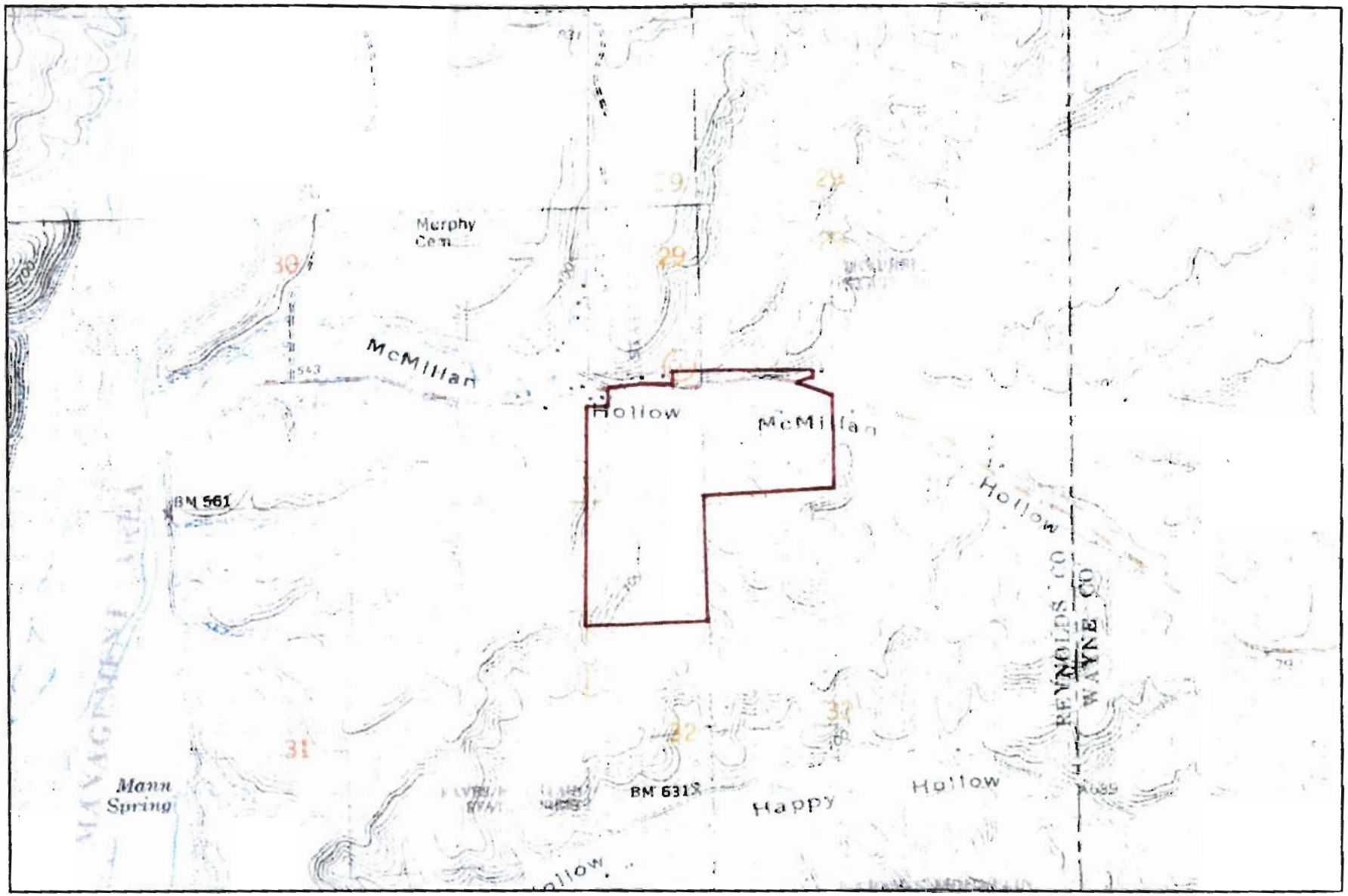
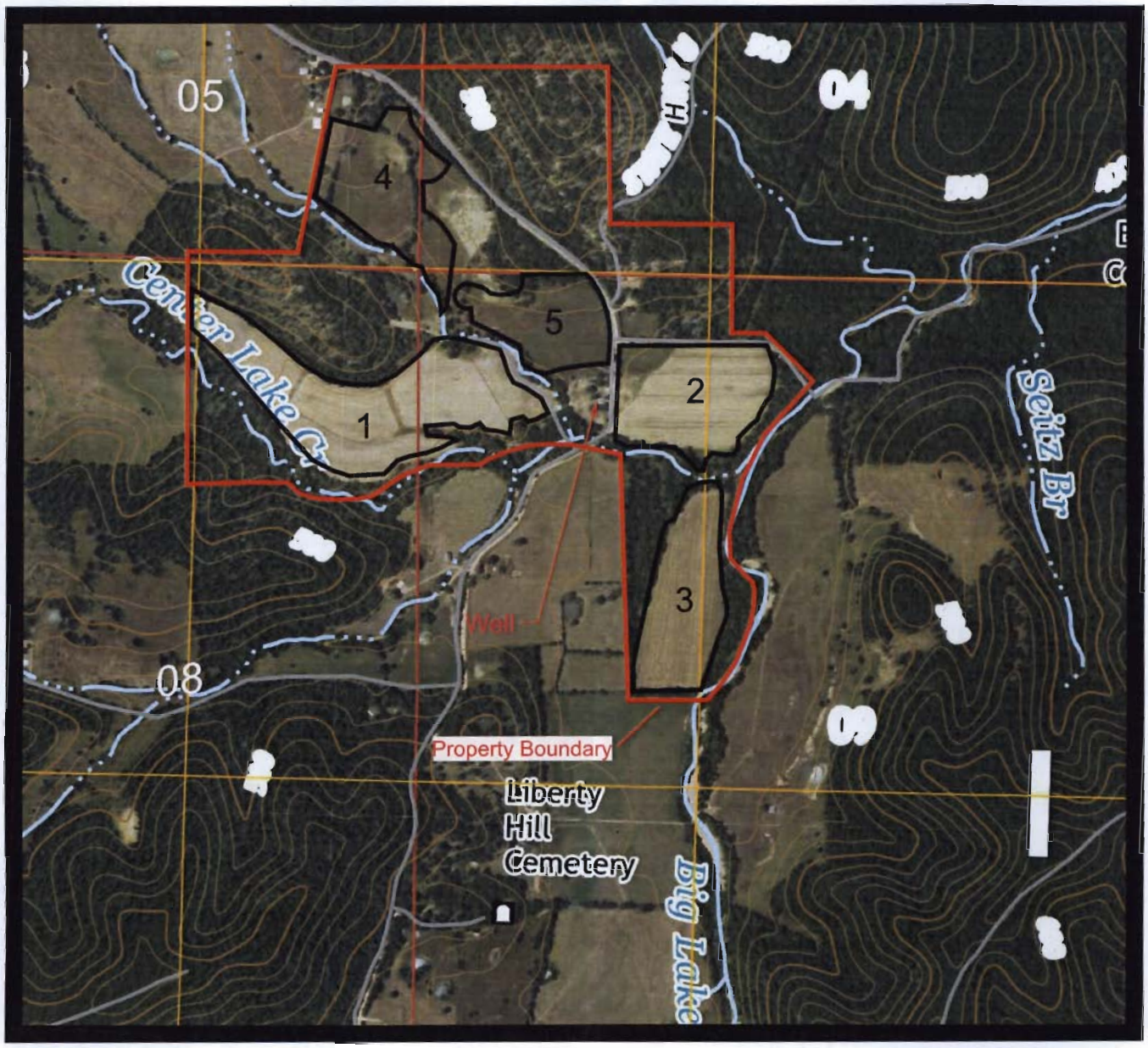


Figure A-4:

Sutton Property Site Map

Ajinomoto Windsor DAF Sludge Land Application



Base Map Source: USGS Topographic Map - Piedmont SE, MO
Contour Interval = 20 feet
All sections are in Township 28 North Range 5 East

Base Map Date: 2015

N

1000 0 1000 2000 3000

Scale (feet)

Figure A-5
Rose Property Site Map
Ajinomoto Windsor DAF Sludge Land Application

OPERATION AND MAINTENANCE MANUAL

WINDSOR FOODS WASTEWATER TREATMENT PLANT

PIEDMONT, MISSOURI

December, 2011

Windsor Foods Operation and Maintenance Manual
Windsor Foods Wastewater Treatment Plan – Piedmont, Missouri

Windsor Foods Operation and Maintenance Manual
Windsor Foods Wastewater Treatment Plan – Piedmont, Missouri (continued)

1. Introduction.

The Windsor Foods food processing plant is located in Piedmont, Missouri. The plant produces a variety of breaded food products. The production processes generate wastewater that contains flour, batter mix, and cooking oil. Food processing wastewater is discharged to an industrial wastewater treatment plant (IWTP) where it is treated for removal of suspended solids (TSS), hexane extractable material (HEM), and insoluble biochemical oxygen demand (BOD). No sanitary wastewater is discharged to the IWTP.

The treated industrial wastewater is discharged to the City of Piedmont sanitary sewer under the regulation of an Industrial User Permit issued by the City of Piedmont.

The wastewater treatment process consists of pH adjustment, chemical addition to promote the formation of floc, and the removal of suspended solids using a dissolved air flotation (DAF) unit. Suspended solids are removed from the wastewater by skimming the material from the DAF unit. This DAF sludge is subsequently land applied under the regulation of a Missouri State Operating permit (permit number MO0123552), a copy of which is included as Attachment A.

This Operations and Maintenance (O&M) Manual is required by the Missouri State Operating permit (page 12 of 14, Special Conditions, section r) and includes those items that are needed to ensure the proper operation and record-keeping associated with the waste management and land application systems.

2. Sludge Sampling and Analysis.

Sludge sampling and analysis requirements are set forth as specified in the Windsor Foods permit.

2.1. Quarterly Monitoring. Specified in: A. Effluent Limitations and Monitoring Requirements – Outfall # 001 – Sludge Land Applied

1) Chlorides
2) Sodium adsorption ratio (SAR)

Both of these parameters shall be sampled and analyzed on a quarterly basis at the storage container or the application vehicle. Samples shall be grabs and daily maximum limits are 250 mg/kg and 5 (no units) for chlorides and SAR, respectively.

2.2. Other Monitoring. Specified in C.9.h. Special Conditions – Land Application of Industrial Sludge – Sludge Monitoring.

Sampling shall be conducted on a composite sample consisting of at least seven (7) sub-samples collected at representative locations of the sludge to be land applied.

Parameter	Frequency
Total suspended solids	once/day during land application
TKN, nitrate	once/100 dry tons
Total P and K	once/100 dry tons
Total Na, Ca, Mg	once/500 dry tons
SAR	once/500 dry tons
Cl, HEM, pH	once/500 dry tons
C:N ratio, e-coli	once/500 dry tons
Al, As, Be, B, Cd, Cr	once/1000 dry tons
Cu, F, Pb, Mn, Hg, Mo	once/1000 dry tons
Ni, Se, Ag, Sn, Zn	once/1000 dry tons

The annual sludge mass generated in 2010 was approximately 550 (dry) tons. Based on that approximate annual sludge generation rate, analysis would be required in accordance with the following approximate frequency:

Once/100 tons – every 2 months
Once/500 tons – every year
Once/1000 tons – every 2 years

Table 2.1 was prepared using these sludge permit sampling and analysis requirements. The sampling and analysis frequency will be modified, if the sludge generation rate changes significantly.

TABLE 2.1: WINDSOR FOODS DAF SLUDGE SAMPLING AND ANALYSIS REQUIREMENTS

	Sampling Schedule												
Parameter	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Comment
Chloride	X			X			X			X			
Sodium absorption ratio	X			X			X			X			
TSS	X	X	X	X	X	X	X	X	X	X	X	X	Test each day that sludge is applied
TKN	X		X		X		X		X		X		
ammonia	X		X		X		X		X		X		
nitrate	X		X		X		X		X		X		
total phosphorus	X		X		X		X		X		X		
total potassium	X		X		X		X		X		X		
oil & grease									X				
carbon:nitrogen ratio									X				
pH									X				
e-coli									X				
total aluminum									X				Test once every two years
total arsenic									X				Test once every two years
total beryllium									X				Test once every two years
total boron									X				Test once every two years
total cadmium									X				Test once every two years
total chromium									X				Test once every two years
total copper									X				Test once every two years
total fluoride									X				Test once every two years
total lead									X				Test once every two years
total manganese									X				Test once every two years
total mercury									X				Test once every two years
total molybdenum									X				Test once every two years
total nickel									X				Test once every two years
total selenium									X				Test once every two years
total silver									X				Test once every two years
total tin									X				Test once every two years
total zinc									X				Test once every two years

Table 3 Notes:

1. TSS analysis must be conducted when analyzing for all other parameters in Table 3.
2. Sampling and analysis requirements are based on Windsor Foods operating permit issued by MDNR on July 12, 2011.
3. Sampling frequency based on sludge generation rate of 500 (dry) tons per year.

3. Soil Sampling and Analysis.

3.1. Parameters and Frequency.

Soil sampling and analysis requirements are set forth in the following section of the Windsor Foods permit:

C.9.i. Special Conditions – Land Application of Industrial Sludge – Soil Monitoring.

Those requirements include:

1) Composite soil samples shall be collected for all sites where land application has occurred within the last 12 months or will occur within the next 12 months.

2) Nitrate nitrogen shall be tested twice per year (once in the spring and once in the fall). Soil samples shall be collected for the top 0-12 inches, or 0-24 inches, or more.

3) The following parameters shall be analyzed prior to land application and once every three (3) years thereafter, unless no land application has occurred at the site during that three (3) year period. Soil samples for the following parameters shall be collected for the 0 to 6 inch depth.

    a) Soil pH.
    b) Percent organic matter.
    c) Cation exchange capacity.
    d) Exchangeable sodium percentage.
    e) Available phosphorus as P (Bray P-1 test method).

3.2. Sampling Procedures and Locations.

Soil sampling shall be conducted in accordance with the following document (a copy is included as Attachment B):

MU Guide number G 9215 – Soil Sampling Pastures, published by MU Extension, University of Missouri-Columbia.

Soil sample locations are shown on the attached drawings:

Figure 3.1 – Hawkins Property
Figure 3.2 – Tooke Property
Figure 3.3 – Smith Property
Figure 3.4 – Hill Property

Each property is broken down into tracts as shown on the drawings.

Fifteen to twenty grab samples shall be collected at the specified depths from each of the tracts identified on the respective figures. The grabs shall be composited such that a composite is generated for each tract. Composite samples shall be identified as "Hawkins Tract # 1, Tooke Tract # 1, etc. and shall be placed in zip-loc plastic bags for shipment to the laboratory.

3.3. Analytical Laboratory.

Samples shall be submitted to the following laboratory for analysis:

University of Missouri at Columbia
23 Mumford Hall
Soil Testing
Columbia, MO 65211

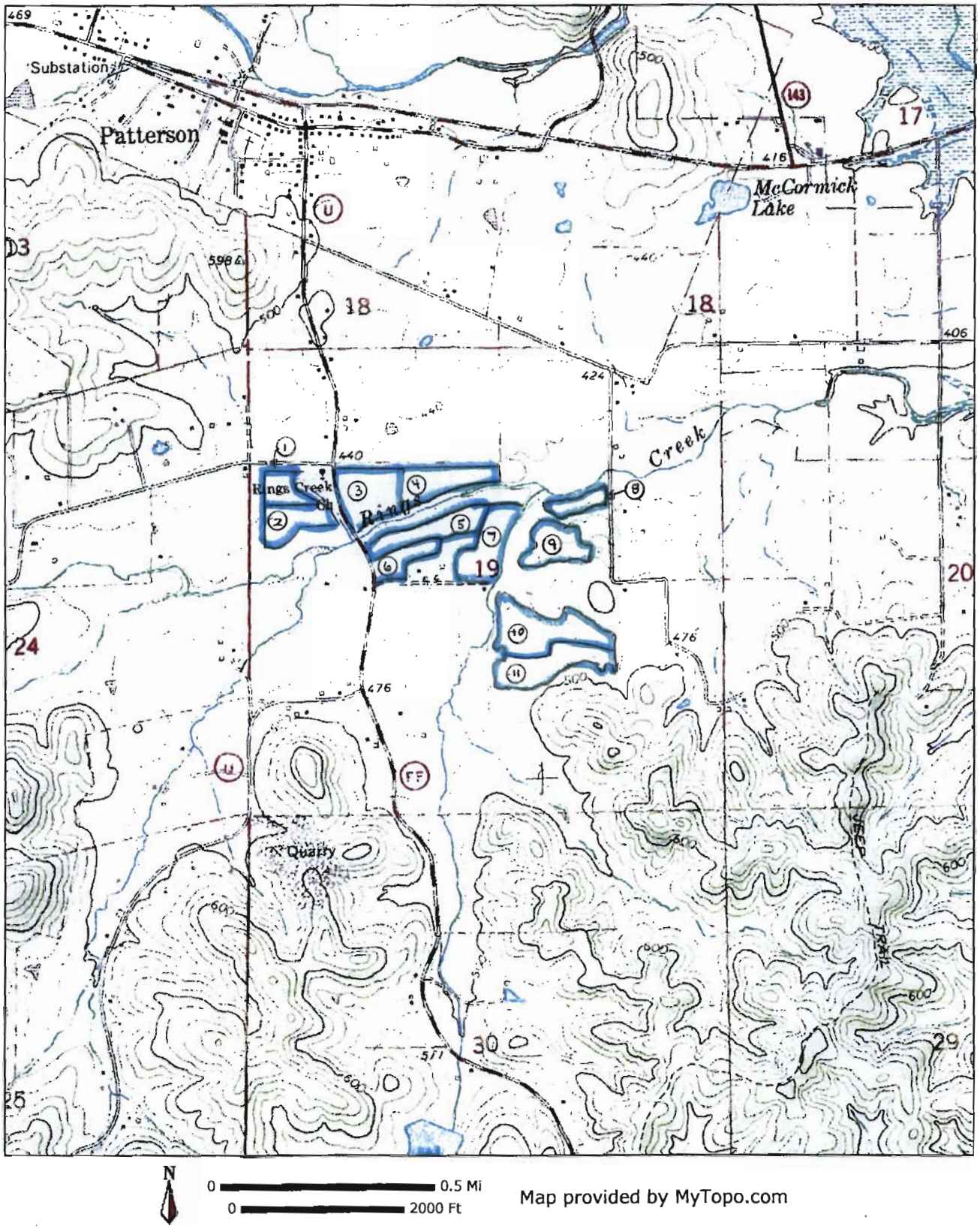


FIGURE 3.1: HAWKINS SITE TRACT LOCATIONS AND NUMBERS FOR SOIL SAMPLING

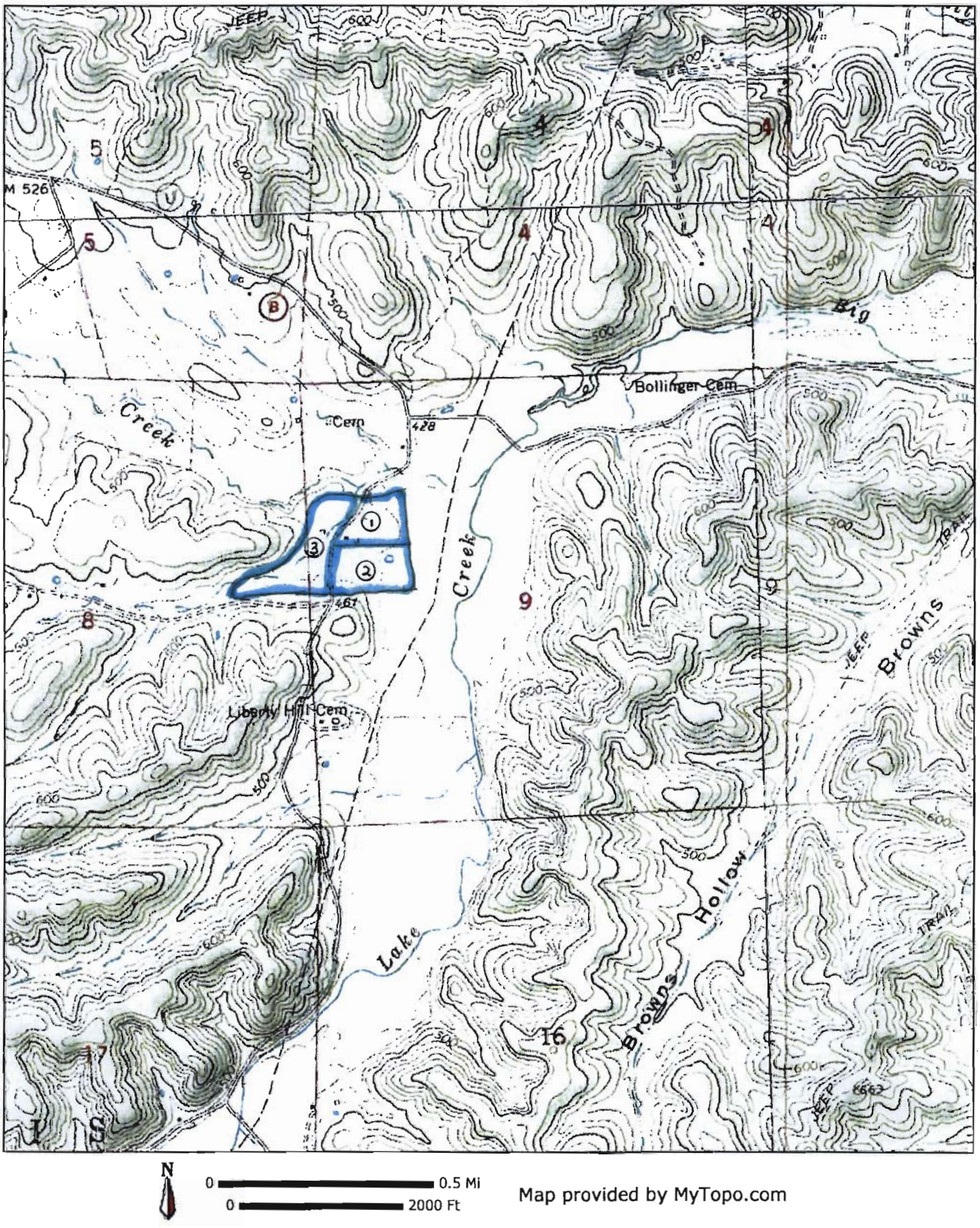


FIGURE 3.2: TOOKE SITE TRACT LOCATIONS
AND NUMBERS FOR SOIL SAMPLING

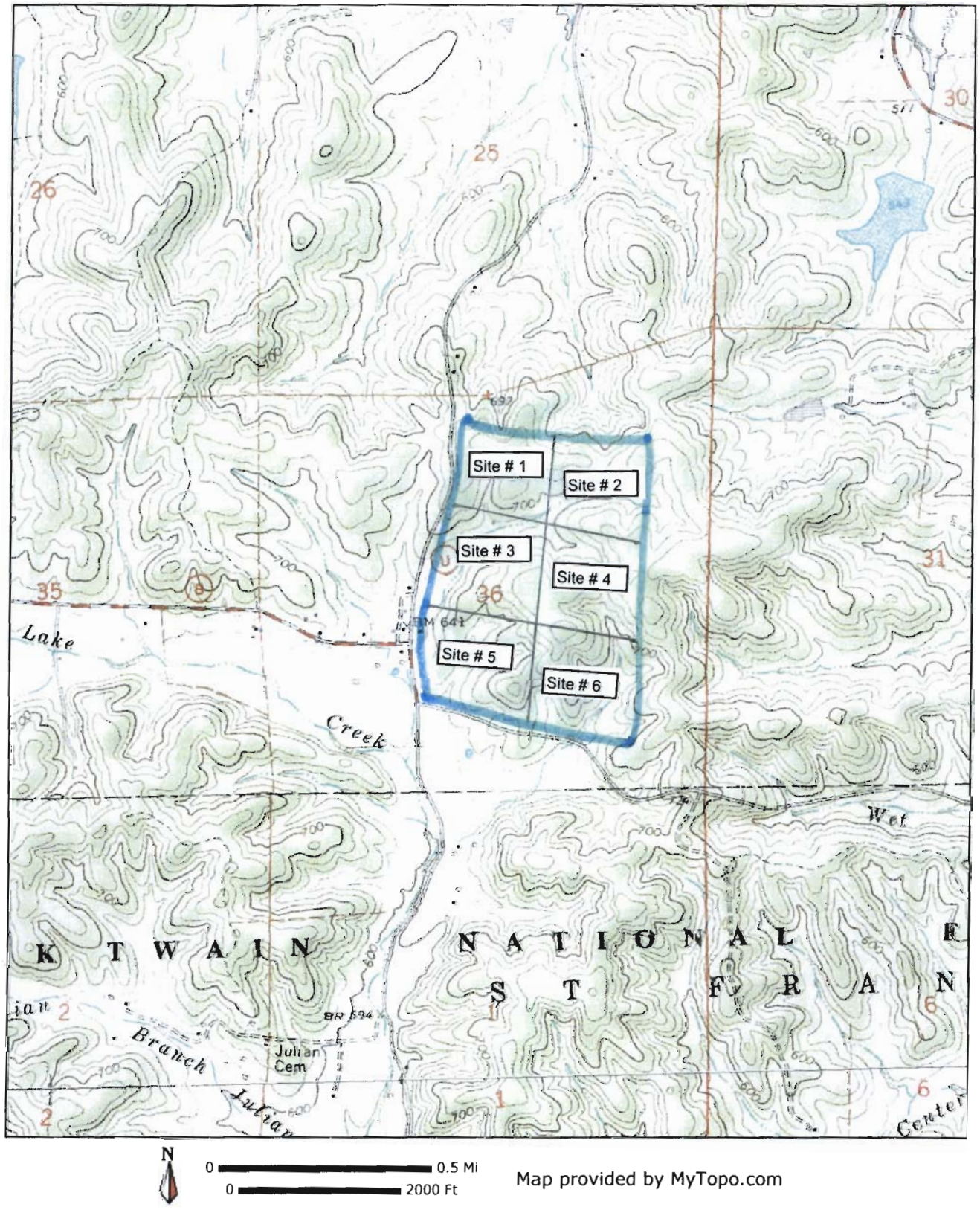


FIGURE 3.3: SMITH SITE TRACT LOCATIONS
AND NUMBERS FOR SOIL SAMPLING

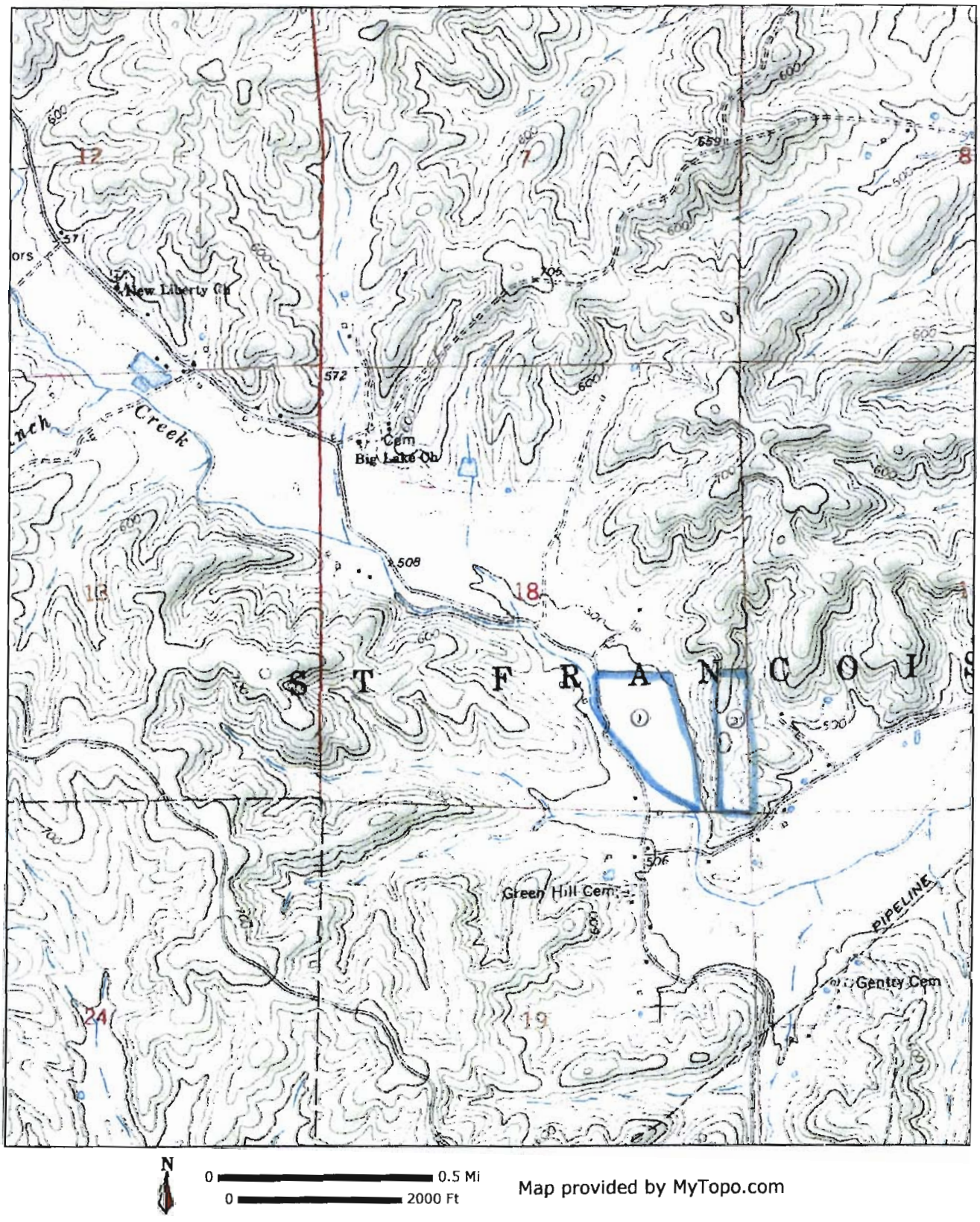


FIGURE 3.4: HILL SITE TRACT LOCATIONS
AND NUMBERS FOR SOIL SAMPLING

4. Stream Monitoring.

Stream samples shall be collected in accordance with the requirements set forth in the following section of the permit:

A. Effluent Limitations and Monitoring Requirements – page 4 of 14.

The following parameters shall be analyzed with respect to each stream sample:

1) Ammonia nitrogen as N.
2) Nitrate nitrogen as N.
3) Dissolved phosphorus as P.
4) Temperature (field).
5) pH (field).
6) Dissolved oxygen.
7) Total suspended solids.

Samples shall be grabs collected in one (1) – 250 ml plastic sulfuric acid-preserved container and one (1) 500 ml plastic un-preserved container and submitted to CAS Laboratories, Salina, Kansas. Laboratory methods are:

1) Ammonia – SM20-4500-NH3 (G)
2) Nitrate – SM 4500 – NO3 (F)
3) Dissolved phosphorus – SM 4500-P (F) Mod
4) Total suspended solids – SM20th 2540D

Samples shall be submitted using a chain-of-custody (COC) form; a sample COC form is included as Attachment C.

Six (6) stream monitoring sample locations have been identified – one for each of the six (6) land application sites. These stream monitoring locations are identified in the permit as S01 through S06. Table 4.1 provides additional detail with respect to each of the in stream monitoring location as specified by the permit.

Since not all of the land application sites will be used at a given time, stream samples shall be collected in accordance with the following criteria:

1) Stream sampling shall be conducted the month prior to sludge application at a given site.

2) Stream sampling shall be conducted for at least three (3) months following sludge application at a given site.

The Operating Permit includes the following additional sampling requirements with respect to stream sampling:

1) Samples shall be collected at least four (4) feet from the bank, or from the middle of the stream, whichever is less.

2) The following information shall be recorded at the time of stream sampling:
   a. Date.
   b. Time.
   c. Weather conditions.
   d. Unusual stream characteristics (e.g., cloudy, algae growth, etc.).
   e. Description of stream segment (e.g., pool, run, etc.).

3) Samples shall not be collected if any of the following conditions occur:
   a. Unusually turbulent flow.
   b. Still water.
   c. Significant precipitation has recently occurred – 2.5 inches within the previous two (2) weeks or 1 inch within the previous 24 hours.
   d. Turbidity increases notably.

   The exception to items a. and b. would be for the case where those conditions are representative of the stream.

DO and pH meters shall be calibrated within one (1) hour prior to the sampling event.

DO, pH, and temperature measurements shall be performed on-site in the receiving stream, where possible. If necessary, due to high flow conditions, the sample may be collected and measured in a container. However, for that case, care shall be taken to ensure that the sample is not aerated and the field analyses shall be completed as soon as possible.

If possible, DO measurements shall be taken during the period from one hour prior to sunrise to one and one-half hour after sunrise.

TABLE 4.1: IN STREAM MONITORING INFORMATION - from page 3 of Windsor Foods Sludge Permit

Stream Monitoring ID	UTM Coordinates X	UTM Coordinates Y	Legal Description	Sec	Twnshp	Range	County	Property Owner	Latitude	Longitude
S01 - Rings Creek at CR 383	718516	4117330	SW1/4 NE 1/4	19	29N	5E	Wayne	Hawkins	37.1768	-90.538
S02 - McMillan Hollow at CC	699232	4124357	SW 1/4 SW 1/4	29	30N	3E	Reynolds	Sutton	37.244	-90.754
S03 - Sulphur Creek at C	711643	4139769	SW 1/4 SE 1/4	9	31N	4E	Iron	Ruble (Savage)	37.38	-90.609
S04 - Big Lake Creek at CR 378	721215	4110778	NE 1/4 NW 1/4	9	28N	5E	Wayne	Tooke	37.117	-90.51
S05 - Big Lake Creek at CR 372	718640	4107547	NE 1/4 NE 1/4	19	28N	5E	Wayne	Hill	37.0887	-90.54
S06 - Big Lake Creek at CR 361	716115	4112399	NW 1/4 SW 1/4	1	28N	4E	Wayne	Smith	37.133	-90.657

5. Stormwater Run-off Monitoring.

Storm water run-off samples shall be collected in accordance with the requirements set forth in the following section of the permit:

A. Effluent Limitations and Monitoring Requirements – page 4 of 14.

The following parameters shall be analyzed with respect to each stream sample:

1) Biochemical oxygen demand (BOD).
2) Chemical oxygen demand (COD).
3) Total suspended solids (TSS).
4) Total Kjeldahl Nitrogen (TKN).
5) Ammonia.
6) Nitrate/nitrite.
7) Chloride.
8) Oil and grease.
9) Total phosphorus.
10) E-coli.
11) pH (field).
12) Temperature (field).
13) Total boron.

Samples shall be grabs collected in the following containers:

- 250 plastic – nitric acid-preserved.
- 1 liter amber – sulfuric acid-preserved.
- 500 ml plastic – un-preserved.
- 250 ml plastic – sterile preserved with sodium thiosulfate.
- 250 ml plastic – sulfuric acid-preserved.

Samples shall be submitted to CAS Labs, Salina, Kansas. Laboratory methods are:

1) Biochemical oxygen demand (BOD) – SM 5210B.
2) Chemical oxygen demand (COD)SM 5220D.
3) Total suspended solids (TSS) – SM20th 2540D.
4) Total Kjeldahl Nitrogen (TKN).
5) Ammonia – SM20-4500-NH3 (G).
6) Nitrate/nitrite – SM 4500 – NO3 (F).
7) Chloride – EPA 300.0.
8) Oil and grease – EPA Method 1664.
9) Total phosphorus – SM 4500 P (B&F) (M).
10) E-coli – SM 9223B Colilert.
11) pH (field).
12) Temperature (field).
13) Total boron – EPA 200.7 Rev. 4.4.

Samples shall be submitted using a chain-of-custody (COC) form; a sample COC form is included as Attachment C.

Nine (9) storm water run-off sample locations have been identified – one for each of five (5) of the land application sites and four (4) for one of the land application (Hawkins) sites. These stream monitoring locations are identified in the permit as outfall # 002 through # 010. Table 5.1 provides additional information with respect to each of the storm water run-off monitoring location as specified by the permit.

Since not all of the land application sites will be used at a given time, storm water run-off samples shall be collected in accordance with the following criteria:

1) Storm water run-off sampling shall be conducted the month prior to sludge application at a given site.

2) Storm water run-off sampling shall be conducted for at least three (3) months following sludge application at a given site.

TABLE 5.1: STORM WATER MONITORING INFORMATION - from pages 2 and 3 of Windsor Foods Sludge Permit

Outfall Number	UTM Coordinates X	Y	Legal Description	Sec	Twnshp	Range	County	Property Owner	Receiving Stream	Latitude	Longitude
002	717373	4117129	SW 1/4 NW 1/4	19	29N	5E	Wayne	Hawkins	Rings Creek	37.175	-90.551
003	718333	4117013	SW 1/4 NE 1/4	19	29N	5E	Wayne	Hawkins	Rings Creek	37.174	-90.541
004	717818	4117262	SE 1/4 NW 1/4	19	29N	5E	Wayne	Hawkins	Rings Creek	37.176	-90.546
005	717905	4117102	SE 1/4 NW 1/4	19	29N	5E	Wayne	Hawkins	Rings Creek	37.175	-90.546
006	699409	4124288	SW 1/4 SW 1/4	29	30N	3E	Reynolds	Sutton	Unnamed Trib. to Blank River	37.244	-90.752
007	711609	4139835	not given	9	31N	4E	Iron	Ruble (Savage)	Sulphur Creek	37.381	-90.61
008	720539	4110762	not given	9	28N	5E	Wayne	Tooke	Wet Fork	37.117	-90.518
009	718520	4107966	SE 1/4	18	28N	5E	Wayne	Hill	Big Lake Creek	37.092	-90.541
010	716095	4113027	SW 1/4	36	29N	4E	Wayne	Smith	Unnamed Trib. to Big Lake Creek	37.139	-90.567

6. Site Information Sheets.

Copies of site information sheets (SIS) are included as Attachment D. As specified by the Windsor Foods permit, an SIS has been prepared for each land application site. These documents will be up-dated and provided to the respective land owners on an annual basis.

7. Record-Keeping and Reporting.

All record-keeping information presented herein shall be maintained for at least five (5) years and shall be made available to the MDNR upon request.

7.1. 24 Hour Reporting. Any unauthorized discharge from storage, treatment, or land application systems shall be reported to the MDNR as soon as possible, but always within 24 hours of discovery of the discharge.

7.2. Daily Logs Sheets. Daily log sheets shall be kept on file at the Windsor Foods office for each application site. The logs sheets shall include the following information:

1) Site identification.
2) Date of sludge application.
3) Volume (gal) of sludge applied – total and per acre.
4) Mass (lb.) of nutrient applied (Plant Available Nitrogen – PAN) – total and per acre.
5) Mass (dry tons) of sludge applied – total and per acre.

Two logs sheets have been prepared to meet this requirement. A field log sheet is included as Attachment E. That log sheet will be completed by the land application contractor following each land application event. The information provided by that log form will be transferred to a more detailed log form, which will include additional information (e.g., solids loading, nutrient loading, etc.). The detailed log form is included as Attachment F.

7.3. Site Information Sheets. Site information sheets (SIS) were discussed in Section 6 and copies of the SIS for the respective sites are included as Attachment D.

7.4. Climatic Observations. The following climatic data shall be collected and recorded for the sludge application sites:

1) Precipitation – daily, monthly, and annual.
2) Temperature – daily minimum and maximum.
3) Soil moisture conditions at the time of application.

Items 1) and 2) will be reported using data provided by the National Climatic Data Center for the Clearwater Dam weather station.

Item 3 will be recorded on the daily log sheet – Attachment E.

7.5. Storage Structure Inspections. Sludge storage tanks will be inspected on a monthly basis for structural integrity, visible leaks, and measurement of liquid sludge depth. The liquid depth shall be measured and reported as feet below the top level of the storage tank. A "Sludge Storage Tank Inspection" form is included as Attachment G.

7.6. Land Application Equipment Checks. The sludge application equipment and land application site shall be visually inspected each day that sludge is land applied. The purpose of these inspections is to check for equipment malfunctions and run-off, respectively. A "Land Application Equipment and Site Inspection" form is included as Attachment H.

8. Land Application Requirements.

In addition to requirements already set forth in this O&M Manual, land application of DAF sludge generated from the Windsor Foods Wastewater Treatment Plant (WWTP) shall adhere to the following requirements.

1) Sludge shall not be land applied when soil is frozen, snow-covered, or saturated. This decision shall be made by the land application contractor.

2) Sludge shall not be land applied when there an impending rainfall event. This decision shall be made by the land application contractor.

3) Sludge shall not be applied to slopes, which exceed 10 percent.

4) Sludge shall be land applied in accordance with the following buffer zones.

   a. 300 ft. from down-gradient pond, lake, sinkhole, losing stream or water supply.
   b. 150 ft. from dwelling.
   c. 100 ft. from gaining stream.
   d. 50 ft. from wet weather gaining stream.
   e. 50 ft. from property line.

5) Sludge shall be applied at a uniform rate over the entire land application site.

6) The land application equipment shall be capable of applying the design volume (700,362 gallons per year) within 800 hours. Therefore, land application equipment shall possess the ability to spread sludge at a rate of at least 900 gallons per hour.

   The sludge is land applied using a tank truck with a capacity of approximately 1840 gallons. The sludge is applied by coarse spray from the rear of the vehicle.

7) Application of sludge shall only occur during daylight hours.

9. Nutrient Management.

All of the sites to which sludge is applied are pasture ground.

Before presenting the nutrient management information based on plant available nitrogen (PAN) loading, it should be noted that the soil test phosphorus level are well below 120 pounds per acre (using the Bray P-1 test method). Therefore, the permit conditions relating to phosphorus management are not applicable.

The sludge nitrogen application rate shall be based on the following equation:

$$PAN = CNR - SRN - CFN \qquad (9\text{-}1)$$

Where:

PAN = plant available nitrogen in sludge in lb. N/acre/year

CNR = crop nitrogen requirements in lb. N/acre/year

SRN = soil residual nitrogen in pound N/acre

CFN = commercial fertilizer and other nitrogen sources applied in pounds N/acre

For each site, the crop (grass) is not harvested and grass vegetation is maintained on the site. Therefore, the CNR rate is 40 lb. N/acre/year.

For perennial crops (i.e., grass), SRN is considered to be zero.

No additional fertilizer is applied, therefore, CFN is zero.

Based on these values, PAN is equal to 40 lb. N/acre/year.

The PAN concentration for industrial sludge (for sludge applied once per year or every two years) is calculated using the following equation:

$$PAN = ([TKN) \times (0.6)] + [(NO_3) \times (0.9)] \qquad (9\text{-}2)$$

Where:

PAN = plant available nitrogen concentration in mg/kg as N

TKN = Total Kjeldahl Nitrogen concentration in mg/kg as N

NO_3 = nitrate concentration in mg/kg as N

An example calculation is presented using the TKN and nitrate concentrations measured in a September 13, 2011 DAF sludge sample. The concentrations for that sample were 1800 mg/kg as N and < 0.2 mg/kg as N for TKN and nitrate, respectively. The PAN concentration is then calculated as:

PAN = [(1800) x (0.6)] + [(0.2) x (0.9)] = 1080 mg/kg as N

The PAN loading for the application of DAF sludge generated during that time period (i.e., 4th quarter of 2011) is calculated as follows.

Basis: 1 gallon of DAF sludge

PAN Loading = (1080 lb/10^6 lb) x (9 lb/gal) x (1 gal)

= 0.0097 lb/gal

The annual loading rate would then be calculated as:

PAN (lb/acre/year) = 9.7 x V/A (9-3)

Where:

V = volume of sludge applied in gallons
A = applied area – acres

As an example, if 15,000 gallons of DAF sludge were applied to tract # 1 at the Hawkins site, then the PAN loading would be:

(0.0097 lb/gal) x (15,000 gallons)/(4 acres) = 36.4 lb. PAN/acre

10. Other Pollutant Limitations and Loading Rates.

In addition to the PAN loading limits outlined Section 9, other limitations are set forth below. These requirements are specified in Section C.9.q. – Page 12 of 14.

Oil and Grease. For surface application, the sludge shall not exceed 15 % oil & grease content (by weight) and shall not exceed a loading rate of 5,000 pounds/acre-year.

Calculations will be conducted on a periodic basis (i.e., using the most current DAF sludge analytical data) to insure that the oil and grease loading rate (as well as the PAN loading rate) do not exceed the specified limits.

Metals. Metals concentrations in the DAF sludge shall not exceed the concentrations set forth in Table 2 of the University of Missouri Water Quality Guide – number WQ-425. Those values are:

Arsenic – 41 mg/kg
Cadmium – 39 mg/kg
Chromium – 1200 mg/kg
Lead – 300 mg/kg
Mercury – 17 mg/kg
Molybdenum – 18 mg/kg
Nickel – 420 mg/kg
Selenium – 36 mg/kg
Zinc – 2800 mg/kg

If a metal concentration exceeds the value specified above, then the cumulative mass (lb./acre) for that metal shall be included in the annual report.

Sampling for these metals was conducted in September, 2011; results were:

Arsenic – < 3 mg/kg
Cadmium – < 1 mg/kg
Chromium – 7 mg/kg
Lead – 2 mg/kg
Mercury – < 0.1 mg/kg
Molybdenum – < 3 mg/kg
Nickel – < 3 mg/kg
Selenium – < 3 mg/kg
Zinc – 89.6 mg/kg

Based on these results, it is extremely unlikely that the cumulative mass will need to be reported for any of the metals. As specified in Table 2.1, metals sampling and analysis will be conducted once every two (2) years.

Sodium Content in Soil. The sodium soil concentration shall not exceed 10 % Exchangeable Sodium Percentage (ESP). Based on soil sampling that was conducted in 2011, the highest ESP value measured with respect to 22 sites, was 1.4 %.

Chloride. The application of chloride shall not exceed 500 pounds per acre per year. Based on the historical chloride concentration measured in the sludge, chloride loading rates would typically be in the range of 10 lb/acre-year. Therefore, it is anticipated that the chloride loading will remain well below the 500 lb./acre-year limit.

Boron. Boron loading shall not exceed a cumulative total of 600 pounds per acre.

Based on the 2011 sludge concentration of < 100 mg/kg (wet weight basis), and the projected annual loadings of approximately 4000 gallons/acre, the annual boron loading would be (conservatively) 3.6 lb./acre-year. Based on these calculations, the boron loading limit would not be exceeded for 170 years.

11. Response Notification Contacts.

The following personnel are responsible for responding to and reporting unauthorized discharges of DAF sludge. Alternate contacts shall be notified in the event that the primary contact is not available.

Primary Contact:
Name: Gary Cox
Title: Maintenance Manager
Phone Number: 573-2223-7722, ext. 222

Alternate Contact # 1:
Name: Pam Cox
Title: General Manager
Phone Number: 573-2223-7722, ext. 201

Alternate Contact # 2:
Name: Ken Julian
Title: Extended Shift Maintenance Supervisor
Phone Number: 573-2223-7722, ext. 205

Alternate Contact # 1:
Name: Frank King
Title: Production Manager
Phone Number: 573-2223-7722, ext. 205

Unauthorized discharges from the storage, treatment, or land application system shall be reported to the MDNR SE Regional office (573-840-9750) as soon as possible but always within 24 hours of becoming aware of the release.

12. Employee Training.

Employee training shall be conducted on an annual basis. Windsor Foods personnel shall receive training with respect to the following topics:

1) Soil sampling.
2) Stream sampling.
3) Storm water run-off sampling.
4) Record-keeping.
5) Unauthorized discharge response and reporting.
6) General permit requirements.

In addition, land application contractors shall receive training with respect to the following topics:

1) Permissible land application conditions.
2) Record-keeping.
3) General permit requirements.

A Training Record Form is included as Attachment I.

13. Performance Audits.

Performance audits shall be conducted on an annual basis by an independent party. An audit report shall be prepared and included with the Annual Report.

ATTACHMENT A

WINDSOR FOODS MISSOURI STATE OPERATING PERMIT
PERMIT NO. MO0123552

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended

Permit No.:	MO0123552
Owner:	HM International, LLC
Owner's Address:	12112 Technology Blvd., Austin, TX 78727
Continuing Authority:	Same as above
Continuing Authority's Address:	Same as above
Facility Name:	Windsor Foods
Facility Address:	#3 Industrial Dr., Piedmont, MO 63957
Legal Description:	SE ¼, SW ¼, Sec. 3, T28N, R3E, Wayne County
UTM Coordinates:	X=703221, Y=4110877
Receiving Stream:	McKenzie Creek (P)
First Classified Stream and ID:	McKenzie Creek (P) (2786) **303(d)**
USGS Basin & Sub-watershed No.:	(11010007-0601)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Outfall #001 – Industrial Wastewater - SIC #2038

Sludge-only facility for no-discharge (land application)/dissolved air flotation (DAF)/(pretreatment) wastewater is discharged to the City of Piedmont's Sanitary sewer system/sludge from the dissolved air flotation system is stored in two vented steel tanks with a total volume of 38,000 gallons until land applied/secondary containment is provided for these steel tanks. Design population equivalent is 700. Design flow of sludge from the sludge generating facility into the storage tanks is 700,362 gallons per year. Actual flow is 1,640 gallons per day. Design sludge production is 405 dry tons/year. Actual sludge production is 344 dry tons/year.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

July 12, 2011
Effective Date

Sara Parker Pauley
Sara Parker Pauley, Director, Department of Natural Resources

July 11, 2016
Expiration Date

Gary L. Gaines, P.E., Director, Southeast Regional Office

FACILITY DESCRIPTION (continued)
Outfall #001 - Land Application System Design

Receiving Stream Watershed: a gaining stream setting.

Facility Type: No-discharge Sludge Only Facility and Land Application System.

Other (describe): Sludge is hauled and land applied by a contract hauler.

Storage Capacity: Design storage for the sludge is 23 days at a generation rate of 1640 gallons/day.

Land Application:
Sludge Volume /year: 600,000 gallons; 344 dry tons/year
Application areas: 412 acres total available
Application rates/acre: 1.1 dry tons/application, 3.5 dry tons/year
Field slopes: less than 10 percent
Equipment type: tank truck
Vegetation: grass land

Additional Comments:

Outfall # 002: Storm Water

Legal Description:	SW ¼, NW ¼, Sec. 19, T29N, R5E, Wayne County
UTM Coordinates:	X=717373, Y=4117129
Receiving Stream:	Rings Creek
First Classified Stream and ID:	Rings Creek (P) 2939
USGS Basin & Sub-watershed No.:	(08020202-0501)

Outfall # 003: Storm Water

Legal Description:	SW ¼, NE ¼, Sec 19, T29N, R5E, Wayne County
UTM Coordinates:	X=718333, Y=4117013
Receiving Stream:	Rings Creek
First Classified Stream and ID:	Rings Creek (P) 2939
USGS Basin & Sub-watershed No.:	(08020202-0501)

Outfall # 004: Storm Water

Legal Description:	SE ¼, NW ¼, Sec 19, T29N, R5E, Wayne County
UTM Coordinates:	X=717818, Y=4117262
Receiving Stream:	Rings Creek
First Classified Stream and ID:	Rings Creek (P) 2939
USGS Basin & Sub-watershed No.:	(08020202-0501)

Outfall # 005: Storm Water

Legal Description:	SE ¼, NW ¼, Sec 19, T29N, R5E, Wayne County
UTM Coordinates:	X=717905, Y=4117102
Receiving Stream:	Rings Creek
First Classified Stream and ID:	Rings Creek (P) 2939
USGS Basin & Sub-watershed No.:	(08020202-0501)

Outfall # 006: Storm Water

Legal Description:	SW ¼, SW ¼, Sec 29, T30N, R3E, Reynolds County
UTM Coordinates:	X=699409, Y=4124288
Receiving Stream:	Unnamed Tributary to Black River (U)
First Classified Stream and ID:	Black River (P) 2732
USGS Basin & Sub-watershed No.:	(11010007-0505)

FACILITY DESCRIPTION (continued)

Outfall # 007: Storm Water
Legal Description: Sec 9, T31N, R4E, Iron County
UTM Coordinates: X=711609, Y=4139835

Receiving Stream: Sulphur Creek (U)
First Classified Stream and ID: Sulphur Creek (C) 2920
USGS Basin & Sub-watershed No.: (08020202-0303)

Taske Outfall # 008: Storm Water
Legal Description: Sec 9, T28N, R5E, Wayne County
UTM Coordinates: X=720539, Y=4110762

Receiving Stream: Wet Fork (C)
First Classified Stream and ID: Wet Fork (C) 2945
USGS Basin & Sub-watershed No.: (08020202-0503)

Outfall # 009: Storm Water
Legal Description: SE ¼, Sec 18, T28N, R5E, Wayne County
UTM Coordinates: X=718520, Y=4107966

Receiving Stream: Big Lake Creek (C)
First Classified Stream and ID: Big Lake Creek (C) 2946
USGS Basin & Sub-watershed No.: (08020202-0503)

Outfall # 010: Storm Water
Legal Description: SW ¼, Sec 36, T29N, R4E, Wayne County
UTM Coordinates: X=716095, Y=4113027 37.1386 -90.567 (Zone 15)

Receiving Stream: Unnamed Tributary to Big Lake Creek (U)
First Classified Stream and ID: Big Lake Creek (C) 2946
USGS Basin & Sub-watershed No.: (08020202-0503)

In Stream Monitoring # S01: Rings Creek at CR 383
Legal Description: SW ¼, NE ¼, Sec. 19, T29N, R5E, Wayne County
UTM Coordinates: X=718516, Y=4117330

In Stream Monitoring # S02: McMillan Hollow at CC
Legal Description: SW ¼, SW ¼, Sec. 29, T30N, R3E, Reynolds County
UTM Coordinates: X=699232, Y=4124357

In Stream Monitoring # S03: Sulphur Creek at C
Legal Description: SW ¼, SE ¼, Sec 9, T31N, R4E, Iron County
UTM Coordinates: X=711643, Y=4139769

In Stream Monitoring # S04: Big Lake Creek at CR 378
Legal Description: NE ¼, NW ¼, Sec. 9, T28N, R5E, Wayne County
UTM Coordinates: X=721215, Y=4110778

In Stream Monitoring # S05: Big Lake Creek at CR 372
Legal Description: NE ¼, NE ¼, Sec. 19, T28N, R5E, Wayne County
UTM Coordinates: X=718640, Y=4107547

In Stream Monitoring # S06: Big Lake Creek at CR 361
Legal Description: NE ¼, SW ¼, Sec 1, T28N, R4E, Wayne County
UTM Coordinates: X=716115, Y=4112399

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #001 - Sludge Land Applied (Note 1)						
Chlorides	mg/kg	250			once/quarter	grab
Sodium Adsorption Ratio (SAR)	ratio	5			once/quarter	grab
Outfalls #002 – 010 - Storm Water Runoff (Note 2)						
Biochemical Oxygen Demand$_5$	mg/L	30			once/month	grab
Chemical Oxygen Demand	mg/L	*			once/month	Grab
Total Suspended Solids	mg/L	30			once/month	Grab
Total Kjeldahl Nitrogen as N	mg/L	*			once/month	Grab
Ammonia Nitrogen as N	mg/L	2.0			once/month	Grab
Nitrate/Nitrite as N	mg/L	3.0			once/month	Grab
Chlorides	mg/L	230			once/month	Grab
Oil and Grease	mg/L	10			once/month	Grab
Total Phosphorus as P	mg/L	*			once/month	Grab
E. Coli	#/100mL	*			once/month	Grab
pH Units	SU	***			once/month	Grab
Temperature (degrees)	°C	*			once/month	Grab
Total Boron	mg/L	*			once/month	Grab
#S1-S6 - Stream Monitoring						
Ammonia nitrogen as N	mg/L	*			once/month	grab
Nitrate nitrogen as N	mg/L	*			once/month	Grab
Dissolved Phosphorus as P	mg/L	*			once/month	Grab
Temperature (degrees)	°C	*			once/month	Grab
pH Units	SU	*			once/month	Grab
Dissolved Oxygen	mg/L	*			once/month	Grab
Total Suspended Solids	mg/L	*			once/month	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE October 28, 2011. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only.

**

Sample discharge at least once for the months of:	Report is due:
January, February, March (1st Quarter)	April 28
April, May, June (2nd Quarter)	July 28
July, August, September (3rd Quarter)	October 28
October, November, December (4th Quarter)	January 28

*** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.5-9.0 pH units.

Note 1 - Sludge that is land applied shall be sampled at the storage basin or application vehicle.

Note 2 - Monitoring during the first hour after a discharge from a rainfall event greater than 0.2 inch in a 24 hour period. Storm water runoff samples shall be collected for each storm water discharge point and the sample from each outfall shall be tested separately.

C. SPECIAL CONDITIONS

1. Emergency Discharge. Outfall 001 may only discharge if rainfall exceeds the 1 in 10 year (Data taken from the Missouri Climate Atlas) or the 24 hour, 25 year (Data taken from NRCS Urban Hydrology for Small Watersheds) rainfall events. **Discharge for any other reason shall constitute a permit violation and shall be recorded in accordance with Standard Conditions, Part 1, Section B.2.b.** Monitoring shall take place once per day while discharging. Test results are due on the 28th day of the month after the cessation of the discharge. Permittee shall monitor for the following constituents:

Constituent	**Units**
Flow	MGD
Biochemical Oxygen Demand$_5$	mg/L
Total Suspended Solids	mg/L
Total Ammonia Nitrogen	mg/L
Nitrate/Nitrite as N	mg/L
Temperature	°C
pH – Units	Standard Units

2. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

3. All outfalls must be clearly marked in the field.

4. Permittee will cease discharge by connection to a facility with an area-wide management plan per 10 CSR 20-6.010(3)(B) within 90 days of notice of its availability.

C. SPECIAL CONDITIONS (continued)

5. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

(a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
   (1) One hundred micrograms per liter (100 µg/L);
   (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
   (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
   (4) The level established in Part A of the permit by the Director.

(b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

6. Report as no-discharge when a discharge does not occur during the report period.

7. Water Quality Standards

(a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.

(b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
   (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
   (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
   (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
   (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
   (5) There shall be no significant human health hazard from incidental contact with the water;
   (6) There shall be no acute toxicity to livestock or wildlife watering;
   (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
   (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

8. The permittee shall comply with any applicable requirements listed in 10 CSR 20-8 and 10 CSR 20-9, unless the facility has received written notification that the Department has approved a modification to the requirements. The monitoring frequencies contained in this permit shall not be construed by the permittee as a modification of the monitoring frequencies listed in 10 CSR 20-9. If a modification of the monitoring frequencies listed in 10 CSR 20-9 is needed, the permittee shall submit a written request to the department for review and, if deemed necessary, approval.

9. Land Application of Industrial Sludge (Outfall #002-007)

a. This special condition does not apply to fertilizer products that are exempted under the Missouri Clean Water Law and regulations, 10 CSR 20-6.015(3)(B)8.

b. Land Application of Sludge. The term "sludge" used herein means sludge, biosolids, by-products and residuals from industrial waste sources. It does not included licensed fertilizer products.

c. Permitted Sites. This permit authorizes land application of sludge to those sites that have been public noticed and listed in the permit facility description. Permittee requests for additional sites including non-owned property must follow permit modification procedures prior to land application. To request additional sites, the permittee shall submit a revised permit application Forms A and R; names and mailing addresses for the landowners and the adjacent property owners for each application site, topographic maps of each site and other pertinent information.

C. SPECIAL CONDITIONS (continued)

d. Public Access Restrictions. Sludge that is applied to potential public access sites must meet the Class A pathogen stabilization criteria listed in 40 CFR 503 regulations such as composting, heat treatment, etc. Sludge that does not meet Class A requirements must be either: (a) applied to agricultural cropland sites; or (b) site must be fenced and posted to restrict public access for at least 12 months; or (c) sludge must be subsurface injected and site restricted for 30 days.

e. No-Discharge Requirement. Sludge shall be stored and land applied during suitable conditions so that there is no-discharge of process wastes from the storage site or land application site. Uncontaminated storm water runoff from land application sites may be discharged when land application was conducted in accordance with permit requirements. In no case, shall the permittee cause violation of the Water Quality Standards rules for general criteria and specific criteria under 10 CSR 20-7.031.

f. Technical Standards. Sludge storage, handling and land application systems shall be designed and operated in accordance with 10 CSR 20-8.020(15). Where minimum storage capacity is not provided, alternate sludge disposal shall be provided such as hauling to a landfill or other permitted treatment system. Hazardous waste regulated under the Missouri Hazardous Waste Law and regulations shall not be land applied under this permit.

g. Sludge Characteristics. Sludge that meets the characteristics listed in the permit application Form R is authorized for land application. Only those pollutants listed in the permit application may be land applied. If new pollutants are identified or if the sludge characteristics or pollutant levels are found to be significantly higher than the permit application values, the department shall be notified within 30 days and a revised permit application submitted prior to any further sludge application.

h. Sludge Monitoring.
Sample and test each storage structure separately. Each test shall be conducted on a composite sample consisting of at least seven sub-samples collected at representative locations of the sludge to be land applied.

(1) Test once/day during land application for percent moisture or total suspended solids.
(2) Test once/100 dry tons for: organic nitrogen, ammonia nitrogen, nitrate nitrogen, total phosphorus, total potassium and percent moisture.
(3) Test once/500 dry tons for: total sodium, total calcium, total magnesium, Sodium Adsorption Ratio, total chlorides, oil & grease, C:N Ratio, pH, total solids, and E. coli. E coli shall be reported as organisms per gram of total solids using the Most Probable Number (MPN) method.
(4) Test once/1000 dry tons for: aluminum, arsenic, berylium, boron, cadmium, chromium, beryllium, copper, fluoride, lead, manganese, mercury, molybdenum, nickel, selenium, silver, tin, zinc and total solids. Metals shall be tested as "total" metal and reported on dry weight basis.
(5) Test once/year for the same list of pollutants that are required for effluent testing under Section A of the permit excluding BOD, COD, THM and wet test.
(6) Test once/year for any other pollutants detected in the sludge as reported in permit application Form R.
(7) Testing under paragraphs (4) through (6) above, may be reduced to once/5 years for any pollutants that are not detected in the initial testing results.

i. Soil Monitoring.

(1) Composite soil samples shall be collected for all sites where land application has occurred within the last 12 months; or where land application will occur within the next 12 months.

(a) Nitrate nitrogen as N shall be tested twice per year in spring and fall. Soil samples shall be collected for the top 0-12 or 0-24 inches or more.
(b) Soil pH, percent organic matter, cation exchange capacity, exchangeable sodium percentage and available phosphorus as P (Bray P-1 test method) shall be sampled prior to land application and once every three (3) years thereafter, unless no additional land application has occurred at the site. Soil samples shall be collected for the surface 6 inches of soil (0-6 inch depth)

(2) Soil sampling shall be in accordance with University of Missouri (MU) publication G9110, Sampling Your Soil For Testing or other methods approved by the department.
(3) Soil testing methods shall be in accordance with North Dakota Agricultural Experiment Bulletin 499-Revised, Recommended Chemical Soil Test Procedures for the North Central Region or other test methods approved by the department. Soil textural classes shall be based on USDA Soil Taxonomy.

C. SPECIAL CONDITIONS (continued)

(4) The annual report shall include a summary of the soil test results for each field.

j. Subsurface Injection Requirement. Subsurface Injection or immediate incorporation after surface application should be considered where feasible and practicable to reduce exposure to wash off by storm water runoff and to retain nutrients in the soil for crop requirements. Dissolved Air Flotation (DAF) sludge from meat and poultry slaughter and processing facilities or other similar sludge with high oil and grease content shall be subsurface injected or immediately incorporated.

k. Saturated/Frozen Conditions. There shall be no land application during frozen, snow covered, or saturated soil conditions. There shall be no application on days when there is observation by operator of an imminent or impending rainfall event. An on-site visual investigation of the field's soil moisture condition, followed by testing of the soils, will be made to determine whether land application can occur. The visual and soil test procedures will be reviewed and approved by the department as part of the Operation and Maintenance (O&M) Manual.

l. Slope and Runoff Restrictions.

(1) Do not place sludge in a location where it is reasonably certain that pollutants will be transported into waters or the state during storm water runoff.
(2) All application sites shall have a Soil and Water Conservation Plan to minimize soil erosion and storm water runoff. The plan shall be developed in accordance with standards of the USDA, Natural Resources Conservation Service (NRCS). The plan shall be developed by a "certified" soil & water conservation planner and shall be included in the O&M Manual.
(3) Subsurface injection should be applied along the contour of the slope to minimize surfacing of liquids at the down gradient end of the injection trench.
(4) Sludge shall not be applied to slopes exceeding ten (10%) percent.

m. Buffer Zones. There shall be no land application within 300 feet of any down gradient pond, lake, sinkhole, losing stream or water supply withdrawal and within 150 feet of dwelling. For surface application, there shall be no land application within 100 feet of gaining streams (Class P and C classified streams listed in Water Quality Standard rule under 10 CSR 20-7.031); 50 feet of wet weather gaining streams and tributaries (unclassified streams); or 50 feet of the property line. For subsurface injection, buffer zones may be reduced to 25 feet from gaining streams (classified and unclassified) and property lines.

n. Application Equipment. The application system shall be operated so as to provide uniform distribution of wastes over the entire land application site. Land application shall occur only during daylight hours. The application system shall be capable of applying the annual design flow during an application period of less than 100 days or 800 hours per year. A list of application equipment and manufacturers specifications shall e included in the O&M Manual.

o. Nutrient Management

Sludge that is land applied shall be applied at nutrient application rates for benefical use in agricultural crop production.

(1) Nitrogen. The permittee shall not exceed the plant available nitrogen management approach as listed in this permit.
(2) Phosphorus. When soil test phosphorus (P)levels are above 120 pounds per acre using Bray P-1 test method, the sludge shall be applied according to state NRCS guidelines and standards for phosphorus based on one of the following methods: Soil Test Phosphorus-Crop Removal Method, Soil Phosphorus Threshold Method or Phosphorus Index Method.
(3) The actual application rates for a given year or growing season must be adjusted based on the approved management approach and the actual sludge and soil testing results and crop requirement. If crop yields are less than predicted, the application rates and management practices must be evaluated and adjusted as appropriate.
(4) This permit will be modified to require a Nutrient Management Plan (NMP) after promulgation of applicable state and EPA rules and guidelines. The NMP will replace the current PAN and phosphorus methods.

C. SPECIAL CONDITIONS (continued)

p. Plant Available Nitrogen (PAN) Procedure

(1) Wastewater, sludge and fertilizer nitrogen applications shall not exceed the crop nitrogen requirements based on realistic crop yield goals and the Plant Available Nitrogen (PAN) method. The application rate shall be calculated as follows:

→ determine → 0

$$\mathbf{PAN = CNR - SRN - CFN}$$

↳ 40 lb/acre/yr → 0

WHERE: **CFN** = Commercial Fertilizer & other nitrogen sources applied in pounds N/acre.
CNR = Crop Nitrogen Requirement in pounds N/acre
PAN = Plant Available Nitrogen in wastewater and sludge expressed as annual pounds N/acre.
SRN = Soil Residual Nitrogen in pounds N/acre.

(2) Crop Nitrogen Requirements (CNR)

(a) CNR shall be based on realistic crop yield goals based on actual on-site yields or county average yields listed in the county soil survey report. To predict the yield goal, use the on-site yields for the last ten years; throw out the highest and lowest yields; then average the remaining 8 years and add 10-20%.
(b) Supplemental nitrogen may be added to row crops when determined necessary for proper plant growth based on testing of plant vegetation or soil nitrate testing during the growing season. Procedures will be reviewed and approved by the department as part of the Operation and Maintenance Manual.
(c) If a crop is not harvested, the CNR rate shall not exceed 40 lbs/acre/year and grass vegetation must be maintained on the site.
(d) For nutrient requirements of specific crops and yields, refer to reference publications listed in this permit.

(3) Commercial Fertilizer Nitrogen (CFN) Planned or previous applications of nitrogen from commercial fertilizer, sludge, biosolids and manure must be evaluated to determine nitrogen availability from these sources. Part of the organic nitrogen applied in the previous 2 years will be available in this years growing season. This nitrogen contribution from other nitrogen sources is not included in the soil residual nitrogen (SRN) calculations and must be calculated separately using the PAN methods listed herein.

(4) Soil Residual Nitrogen (SRN)

(a) For Annual Crops, the nitrogen availability from soil organic matter must be included based on soil CEC and crop season as follows:

SRN in pound N/acre* =
[percent organic mater] x [Soil Availability Factor]

Soil Availability Factor
by Soil CEC Ranges and Organic Matter

Growing Season	Organic Matter	CEC < 10	CEC 10-18	CEC >18
Summer	1%	40*	20	10
Winter	1%	20*	10	5

***Note:** If CEC is less than 10 and organic matter is 1.5% or greater, the total SRN is constant at 60 pounds nitrogen for summer and 30 pounds for winter.

(b) For Perennial Crops the SRN is considered zero(0) for purposes of these calculations because the SRN has already been considered in the crop fertilization recommendations in the referenced publications.

C. SPECIAL CONDITIONS (continued)

(5) Plant Available Nitrogen (PAN) Factors for Industrial Sludge.

(a) PAN Factors for Surface Application:

i. Sludge applied each year or once every 2 years:
PAN = [total kjeldahl nitrogen x 0.6] + [nitrate N x 0.9]

ii. Sludge applied once every 3 years or less frequent:
PAN = [organic N x 0.4] + [ammonia N x 0.6] + [nitrate N x 0.9]

(b) PAN Factors for Subsurface Injection or immediate incorporation:

i. Sludge applied each year or once every 2 years:
PAN = [organic N x 0.6] + [ammonia N x 0.9] + [nitrate N x 0.9]

ii. Sludge applied once every 3 years or less frequent:
PAN = [organic N x 0.4] + [ammonia N x 0.9] + [nitrate N x 0.9]

(c) Sludge, biosolids and manure from sources other than the permittee must be included and should be calculated separately.

(d) The above factors for organic N are based on typical sludge production and storage conditions. If sludge receives additional treatment, use the following table:

Sludge Treatment Methods	Organic Nitrogen Availability Factor by Time Period			
	Year 1	Year 2	Year 3	Cumulative Year 3+
Sludge storage	0.40	0.20	0.10	0.70
Lime Stabilized Sludge	0.40	0.20	0.10	0.70
Aerobic Sludge Digestor	0.30	0.15	0.08	0.53
Anaerobic Sludge Digestor	0.20	0.10	0.05	0.35
Wastewater treatment lagoon sludge (35 lbs BOD/acre loading and >15 years sludge retention)	0.20	0.10	0.05	0.35
Composted Sludge (Class A)	0.10	0.05	0.05	0.20

NOTES: Year 1 is the current year of waste application; year 2 is the previous year of waste application; and year 3 is waste application two years ago. Nitrogen availability for years 1, 2 and 3 must be added when waste is applied in consecutive years. The cumulative factor is used when waste is applied at about the same rate for 3 consecutive years or longer.

C. SPECIAL CONDITIONS (continued)

(e) Field Specific Availability Factors for Inorganic Nitrogen.

Average availability factors for inorganic nitrogen (ammonia and nitrate) are given in paragraph (a) and (b) above. You may also choose to use the field specific availability factors listed in the following tables. The approved factors for each field will be included in the O&M Manual.

Table A. Alternate Field Specific Availability Factors for Surface Application

% of inorganic N (manure., precip.) available

Soil Organic Matter %	Excessively well drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained
< 2	71	66	62	56	45
2-5	66	60	56	49	30
> 5	63	56	49	38	19

Adapted from USDA-NRCS, National Engineering Handbook, Part 651, Animal Waste Management Field Handbook (AWMFH),April 1992, Tables 11-6 & 11-8.

Table B. Alternate Field Specific Availability Factors for Sub-Surface Injection or Immediate Incorporation.

% of inorganic N (manure., precip.) available

Soil Organic Matter %	Excessively well drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained
< 2	89	84	78	70	57
2-5	84	76	70	62	38
> 5	80	70	62	48	24

Adapted from USDA-NRCS, National Engineering Handbook, Part 651, Animal Waste Management Field Handbook (AWMFH),April 1992, Tables 11-6 & 11-8.

(6) Primary reference publications used herein

(a) National Engineering Handbook, Part 651, Agricultural Waste Management Field Book, USDA, Natural Resources Conservation Service (NRCS), April 1992 and current supplements.
(b) Soil Test Interpretations and Recommendations Handbook, University of Missouri, Department of Agronomy, December, 1992.
(c) Managing Nitrogen for Groundwater Quality and Farm Profitability, Soil Science Society of America, Inc., 1991.
(d) Land Application of Sewage Sludge, EPA/831-B-93-002b, U.S. Environmental Protection Agency, December, 1994.

(7) Conversion Factors for laboratory testing results
[mg/L or mg/kg or ppm] x [conversion factor] = [pounds per Unit Volume]

Unit Volume	Conversion Factors
lbs/acre inch	0.226
lbs/1,000 gallons	0.0083
lbs/100 cubic feet	0.0062
lbs/ton (wet wt)	0.002

C. SPECIAL CONDITIONS (continued)

q. Other Pollutant Limitations and Loading Rates

(1) Oil and grease application shall not exceed 0.5% of soil weight or 10,000 pounds oil/acre/year for subsurface injection or soil incorporation. For surface application to growing vegetation, the sludge shall not exceed 15% oil & grease content and shall not exceed 5,000 pounds oil/acre. Avoid heavy application of oil and grease within 30 days before planting of row crops. Oil and grease sludges with low nitrogen content, more than 20:1 Carbon to Nitrogen ratio, may require supplemental nitrogen application to provide proper decomposition of the oil content and prevent nitrogen deficiencies for the crop.

(2) Metals content in the sludge shall not exceed the concentrations and cumulative loading limits listed in University of Missouri, Water Quality Guide number WQ-425. If metals exceed the concentrations in Table 2, the cumulative pounds per acre of that metal shall be reported in the annual report.

(3) Soil content of sodium shall not exceed 10% Exchangeable Sodium Percentage.

(4) Application of chlorides shall not exceed 500 pounds/acre/year. Chlorides are extremely mobile and will be leached into the soil with percolating water. Permittee shall not cause groundwater concentrations exceeding 250 mg/L of chlorides in subsurface waters of the state in accordance with the water quality standard rule under 10 CSR 20-7.031.

(5) Application of boron shall not exceed a cumulative total of 600 pounds/acre.

(6) Toxic organic chemicals shall not exceed background levels found in soils or concentrations listed in 40 CFR 268.40 unless alternate pollutant limits are listed in this permit. Consideration of alternate limits will be based on review of detailed environmental assessment submitted in accordance with 10 CSR 20-8.020(3)(D).

r. Operation and Maintenance Manual

The permittee shall develop, maintain and implement an Operation and Maintenance (O&M) Manual that includes all necessary items to ensure the operation and integrity of the waste handling and land application systems. Copies of the O&M Manual and subsequent revisions shall be submitted to the departments Water Pollution Control Program and Regional Office for review and approval. The O&M Manual shall be written as a detailed step by step guide to operators and managers on how to properly operate the land application program. It shall explain how to comply with permit requirements and include copies of example record keeping and report forms, site information sheets and other reference documents. Include a list of employee contacts and notification procedures for reporting and response to spills and other emergency conditions. It shall include a Soil & Water Conservation Plan, a Nutrient Management Plan and other pertinent information.

s. Lagoon Closure Requirements. Prior to taking the lagoon out of service, a lagoon closure plan shall be submitted for department review and approval in accordance with 10 CSR 20-6.015(5). The lagoon must be closed within two years after ceasing to be used for wastewater treatment. All sludge shall be removed from the lagoon prior to lagoon closure.

t. Training and Performance Audits

The permittee shall provide an employee training program with at least annual refresher courses in proper land application practices and permit requirements. Annual "Performance Audits" of the land application program shall be conducted by an independent party and submitted to the department with the annual report.

u. Record Keeping & Reporting Requirements

(1) 24-hour Reporting. Any unauthorized discharge from storage, treatment or land application system shall be reported to the department as soon as possible but always within 24 hours. Discharge is allowed only as described in the Effluent Limitations and Special Conditions sections of this permit.

(2) Daily log sheets shall be prepared and kept on file at the permittee office location for each application site showing amounts of sludge applied per acre, dates of application, nutrients applied, crop yields and other information required by the permit.

C. SPECIAL CONDITIONS (continued)

(3) Site Information Sheets. "Information Sheets" shall be prepared and updated each year for each application site giving the following information: land owners name, address, telephone number, acreage, designation of buffer zones around limiting features, nutrient content of biosolids, previous nutrients applied, and planned application rates for the year. A copy of the current "Information Sheet" shall be supplied to the landowner prior to land application.

per 9/1/11 telecon with Tim Southards, we (permit) can use data fro a nearby stn

(4) Climatic Obervations. Permittee shall collect and record on-site measurements at the sludge production site for daily, monthly and annual precipitation totals. Permittee shall record daily minimum and maximum air temperatures, time of the measurements and soil moisture conditions at the land application site during land application periods.

(5) Storage Structure Observations. Sludge storage structures shall be checked visually at least once/month for structural integrity, visible leaks and measurement of liquid sludge depth. Liquid depth shall be measured and reported as feet below the top or overflow level of the structure. This paragraph does not apply to wastewater treatment lagoons with sludge retained in the lagoon.

(6) Equipment Checks during Land Application. The application system and application site shall be visually inspected continuously during land application to check for equipment malfunctions and runoff from the application site.

(7) All records and monitoring results shall be maintained for at least five years and shall be made available to the department upon request.

v. Annual Report on Land Application.

An annual report is required in addition to other reporting requirements under Section A of this permit. The annual report shall be submitted by January 28 of each year for the previous growing season from October 1 through September 30 or an alternate 12 month period approved by the Department and listed in the Operation and Maintenance Manual. This report shall be submitted using report forms approved by the Department and shall include a summary of the monitoring and record keeping required by the Special Conditions and Standard Conditions of this permit. The report shall include, but is not limited to, a summary of the following:

(1) Storage basin freeboard at the start and end of the application season, the number of days of land application for each month, the total gallons & dry tons applied, and the total acres used. The monthly and annual precipitation received at the facility.

(2) A tabular summary of monitoring results including any testing conducted in addition to permit requirements.

(3) Location map of application sites and number of acres in each field. A tabular summary for each field showing crops grown, crop yields per acre, total nutrients applied per acre from all sources, application rate in gallons/acre per day, gallons/acre/year and dry tons/acre/year.

(4) The permittee shall certify that information was obtained from the land owner on all other nutrients applied to each site prior to land application of sludge under this permit.

(5) Example PAN and phosphorus calculations, documentation for projected yield goals and table of crop nutrient removal rates.

(6) Narrative summary of any problems or deficiencies identified, permit violations, corrective action taken and improvements planned. Include such items as over application of sludge or nutrients, lower yields than predicted, spills, runoff during land application, citizen complaints, odors, nuisance conditions, improper field storage, improper spreading practices, failure to follow buffer zones, etc.

(7) Submit a report on employee training programs conducted and a copy of the Annual Performance Audit report.

(8) Copies of site Information Sheets and certification that copies were supplied to each landowner for sites used during the reporting period.

D. RECEIVING WATER MONITORING CONDITIONS

1. In-stream samples should be taken at the location(s) specified on page 3 of this permit. In the event that a safe, accessible location is not present at this location, a suitable location can be negotiated with the department. Samples should be taken at least four feet from the bank or from the middle of the stream (whichever is less) and 6-inches below the surface. The upstream receiving water sample should be collected at a point upstream from any influence of the effluent, where the water is visibly flowing down stream.

2. When conducting in-stream monitoring, the permittee shall record observations that include: the time of day, weather conditions, unusual stream/lake characteristics (e.g., septic conditions, algae growth, etc.), the stream segment (e.g., riffle, pool or run) or the lake depth from where the sample was collected. These observations shall be submitted with the sample results.

3. Samples shall not be collected from areas with especially turbulent flow, still water or from the stream bank, unless these conditions are representative of the stream reach or no other areas are available for sample collection. Sampling should not be made when significant precipitation has occurred recently. The sampling event should be terminated and rescheduled if any of the following conditions occur:
   - If turbidity in the stream increases notably; or
   - If rainfall over the past two weeks exceeds 2.5 inches or exceeds 1 inch in the last 24 hours

4. Always use the correct sampling technique and handling procedure specified for the parameter of interest. Please refer to the latest edition of Standard Methods for the Examination of Water and Wastewater for further discussion of proper sampling techniques. All analyses must be conducted in accordance with an approved EPA method. Meters shall be calibrated immediately (within 1 hour) prior to the sampling event.

5. To obtain accurate measurements, D.O., temperature and pH analyses should be performed on-site in the receiving stream where possible. However, due to high flow conditions, access, etc., it may be necessary to collect a sample in a bucket or other container. When this is necessary, care must be taken not to aerate the sample upon collection. If for any reason samples must be collected from an alternate site from the one listed in the permit, the permittee shall report the location with the sample results.

6. Dissolved oxygen measurements are to be taken during the period from one hour prior to sunrise to one and one-half hour after sunrise.

7. Please contact the department if you need additional instructions or assistance.

Missouri Department of Natural Resources
FACT SHEET
FOR THE PURPOSE OF RENEWAL
OF
MO0123552
WINDSOR FOODS

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of storm water from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

A Factsheet is not an enforceable part of an operating permit.

This Factsheet is for a Major ☐, Minor ☐, Industrial Facility ☒; Variance ☐;
Master General Permit ☐; General Permit Covered Facility ☐; and/or permit with widespread public interest ☐.

Part I – Facility Information

Facility Type: IND
Facility SIC Code(s): 2038

Facility Description:
Sludge-only facility for no-discharge (land application)/dissolved air flotation (DAF)/(pretreatment) wastewater is discharged to the City of Piedmont's Sanitary sewer system/sludge from the dissolved air flotation system is stored in two vented steel tanks with a total volume of 38,000 gallons until land applied/secondary containment is provided for these steel tanks. Design population equivalent is 700. Design flow of sludge from the sludge generating facility into the storage tanks is 70,000 gallons per day. Actual flow is 34,250 gallons per day. Design sludge production is 243 dry tons/year. Actual sludge production is 146 dry tons/year.

Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?
☒, - No.

Application Date: 7/23/2010
Expiration Date: 12//8/2010
Last Inspection: 9/8/2010 In Compliance ☐; Non-Compliance ☒

OUTFALL(S) TABLE:

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.11	No Discharge	Industrial	0.2
002	N/A	Land Application	Stormwater Runoff	0
003	N/A	Land Application	Stormwater Runoff	0
004	N/A	Land Application	Stormwater Runoff	0
005	N/A	Land Application	Stormwater Runoff	0
006	N/A	Land Application	Stormwater Runoff	1.3
007	N/A	Land Application	Stormwater Runoff	0
008	N/A	Land Application	Stormwater Runoff	0
009	N/A	Land Application	Stormwater Runoff	0
010	N/A	Land Application	Stormwater Runoff	0

Outfall #001

Legal Description:	SE ¼, SW ¼, Sec. 3, T28N, R3E, Wayne County
UTM Coordinates:	X=703221, Y=4110877
Receiving Stream:	McKenzie Creek (P)
First Classified Stream and ID:	McKenzie Creek (P) 2786
USGS Basin & Sub-watershed No.:	(11010007-0601)

Outfall # 002: Storm Water

Legal Description:	SW ¼, NW ¼, Sec. 19, T29N, R5E, Wayne County
UTM Coordinates:	X=717373, Y=4117129
Receiving Stream:	Rings Creek
First Classified Stream and ID:	Rings Creek (P) 2939
USGS Basin & Sub-watershed No.:	(08020202-0501)

Outfall # 003: Storm Water

Legal Description:	SW ¼, NE ¼, Sec 19, T29N, R5E, Wayne County
UTM Coordinates:	X=718333, Y=4117013
Receiving Stream:	Rings Creek
First Classified Stream and ID:	Rings Creek (P) 2939
USGS Basin & Sub-watershed No.:	(08020202-0501)

Outfall # 004: Storm Water

Legal Description:	SE ¼, NW ¼, Sec 19, T29N, R5E, Wayne County
UTM Coordinates:	X=717818, Y=4117262
Receiving Stream:	Rings Creek
First Classified Stream and ID:	Rings Creek (P) 2939
USGS Basin & Sub-watershed No.:	(08020202-0501)

Outfall # 005: Storm Water

Legal Description:	SE ¼, NW ¼, Sec 19, T29N, R5E, Wayne County
UTM Coordinates:	X=717905, Y=4117102
Receiving Stream:	Rings Creek
First Classified Stream and ID:	Rings Creek (P) 2939
USGS Basin & Sub-watershed No.:	(08020202-0501)

Outfall # 006: Storm Water

Legal Description:	SW ¼, SW ¼, Sec 29, T30N, R3E, Reynolds County
UTM Coordinates:	X=699409, Y=4124288
Receiving Stream:	Unnamed Tributary to Black River (U)
First Classified Stream and ID:	Black River (P) 2732
USGS Basin & Sub-watershed No.:	(11010007-0505)

Outfall # 007: Storm Water

Legal Description:	Sec 9, T31N, R4E, Iron County
UTM Coordinates:	X=711609, Y=4139835
Receiving Stream:	Sulphur Creek (U)
First Classified Stream and ID:	Sulphur Creek (C) 2920
USGS Basin & Sub-watershed No.:	(08020202-0303)

Outfall # 008: Storm Water

Legal Description:	Sec 9, T28N, R5E, Wayne County
UTM Coordinates:	X=720539, Y=4110762
Receiving Stream:	Wet Fork (C)
First Classified Stream and ID:	Wet Fork (C) 2945

USGS Basin & Sub-watershed No.: (08020202-0503)

Outfall # 009: Storm Water
Legal Description: SE ¼, Sec 18, T28N, R5E, Wayne County
UTM Coordinates: X=718520, Y=4107966

Receiving Stream: Big Lake Creek (C)
First Classified Stream and ID: Big Lake Creek (C) 2946
USGS Basin & Sub-watershed No.: (08020202-0503)

Outfall # 010: Storm Water
Legal Description: SW ¼, Sec 36, T29N, R4E, Wayne County
UTM Coordinates: X=716095, Y=4113027

Receiving Stream: Unnamed Tributary to Big Lake Creek (U)
First Classified Stream and ID: Big Lake Creek (C) 2946
USGS Basin & Sub-watershed No.: (08020202-0503)

Receiving Water Body's Water Quality & Facility Performance History:
4 exceedances since the second quarter of 2009

Comments:

Part II – Operator Certification Requirements

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators or supervisors of operations at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.010(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

Check boxes below that are applicable to the facility;

- Owned or operated by or for:
  - Municipalities ☐
  - Public Sewer District: ☐
  - County ☐
  - Public Water Supply Districts: ☐
  - Private sewer company regulated by the Public Service Commission: ☐
  - State or Federal agencies: ☐

Each of the above entities are only applicable if they have a Population Equivalent greater than two hundred (200) and/or fifty (50) or more service connections.

Not Applicable ☒; This facility is not required to have a certified operator.

Part III – Receiving Stream Information

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:
As per Missouri's Effluent Regulations [10 CSR 20-7.015], the waters of the state are divided into the below listed seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall's Effluent Limitation Table and further discussed in the Derivation & Discussion of Limits section.

Missouri or Mississippi River [10 CSR 20-7.015(2)]: ☐
Lake or Reservoir [10 CSR 20-7.015(3)]: ☐
Losing [10 CSR 20-7.015(4)]: ☐
Metropolitan No-Discharge [10 CSR 20-7.015(5)]: ☐
Special Stream [10 CSR 20-7.015(6)]: ☐
Subsurface Water [10 CSR 20-7.015(7)]: ☐
All Other Waters [10 CSR 20-7.015(8)]: ☒

10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1st classified receiving stream's beneficial water uses to be maintained are located in the Receiving Stream Table located below in accordance with [10 CSR 20-7.031(3)].

RECEIVING STREAM(S) TABLE:

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	8-DIGIT HUC	EDU**
McKenzie Creek	P	2786	AQL, LWW, WBC(B)	11010007	Ozark/ Black/ Current
Rings Creek	P	2939	AQL, LWW, WBC(A)	08020202	Ozark/ Upper St. Francis/ Castor
Unnamed Tributary to Black River	U	-	General	11010007	Ozark/ Black/ Current
Unnamed Tributary to Sulphur Creek	U	-	General	08020202	Ozark/ Upper St. Francis/ Castor
Wet Fork	C	2945	AQL, LWW, WBC(B)	08020202	Ozark/ Upper St. Francis/ Castor
Big Lake Creek	C	2946	AQL, LWW, WBC(B)	08020202	Ozark/ Upper St. Francis/ Castor
Unnamed Tributary to Big Lake Creek	U	-	General	08020202	Ozark/ Upper St. Francis/ Castor

* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery(CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND), Groundwater (GRW).
** - Ecological Drainage Unit

RECEIVING STREAM(S) LOW-FLOW VALUES TABLE:

RECEIVING STREAM (U, C, P)	LOW-FLOW VALUES (CFS)		
	1Q10	7Q10	30Q10
McKenzie Creek	.1	.1	1.0
Rings Creek	.1	.1	1.0
Unnamed Tributary to Black River	0	0	0
Unnamed Tributary to Sulphur Creek	0	0	0
Wet Fork	0	0	0
Big Lake Creek	0	0	0
Unnamed Tributary to Big Lake Cr.	0	0	0

MIXING CONSIDERATIONS TABLE:
Mixing Zone: Not Allowed [10 CSR 20-7.031(4)(A)4.B.(I)(a)].
Zone of Initial Dilution: Not Allowed [10 CSR 20-7.031(4)(A)4.B.(I)(b)].

RECEIVING STREAM MONITORING REQUIREMENTS:

Sites S1-S6

PARAMETER(S)	SAMPLING FREQUENCY	SAMPLE TYPE	LOCATION
Nitrate nitrogen as N	Once/month	Grab	S1: Rings Creek at CR 383

Dissolved Oxygen mg/L	Once/month	Grab	S2: McMillan Hollow at CC S3: Sulphur Creek at C S4:Big Lake Creek at CR 378 S5: Big Lake Creek at CR 372 S6:Big Lake Creek at CR 361
pH Units	Once/month	Grab	
Temperature (C)	Once/month	Grab	
Ammonia as N mg/L	Once/month	Grab	
Total Suspended Solids	Once/month	Grab	
Dissolved Phosphorus as P	Once/month	Grab	

Part IV – Rationale and Derivation of Effluent Limitations & Permit Conditions

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:
As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

Not Applicable ☒;
The facility is an existing facility.

ANTI-BACKSLIDING:
A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(c); 40 CFR Part 122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

☒ - All limits in this operating permit are at least as protective as those previously established; therefore, backsliding does not apply.

ANTIDEGRADATION:
In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(2)], the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

☒ - Renewal no degradation proposed and no further review necessary.

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:
As per [10 CSR 20-6.010(3)(B)], …An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

BIOSOLIDS, SLUDGE, & SEWAGE SLUDGE:
Bio-solids are solid materials resulting from wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sludge is any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works. Additional information regarding biosolids and sludge is located at the following web address: http://dnr.mo.gov/env/wpp/pub/index.html, items WQ422 through WQ449.

☒ - Permittee land applies biosolids in accordance with Standard Conditions I and a Department approved biosolids management plan.

COMPLIANCE AND ENFORCEMENT:
Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

Not Applicable ☒;
The permittee/facility is not currently under Water Protection Program enforcement action.

PRETREATMENT PROGRAM:

The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

Pretreatment programs are required at any POTW (or combination of POTW operated by the same authority) and/or municipality with a total design flow greater than 5.0 MGD and receiving industrial wastes that interfere with or pass through the treatment works or are otherwise subject to the pretreatment standards. Pretreatment programs can also be required at POTWs/municipals with a design flow less than 5.0 MGD if needed to prevent interference with operations or pass through.

Several special conditions pertaining to the permittee's pretreatment program may be included in the permit, and are as follows:

- Implementation and enforcement of the program,
- Annual pretreatment report submittal,
- Submittal of list of industrial users,
- Technical evaluation of need to establish local limitations, and
- Submittal of the results of the evaluation

Not Applicable ☒;
The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

REASONABLE POTENTIAL ANALYSIS (RPA):
Federal regulation [40 CFR Part 122.44(d)(1)(i)] requires effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality standard.

In accordance with [40 CFR Part 122.44(d)(iii)] if the permit writer determines that any give pollutant has the reasonable potential to cause, or contribute to an in-stream excursion above the WQS, the permit must contain effluent limits for that pollutant.

Not Applicable ☒;
A RPA was not conducted for this facility.

REMOVAL EFFICIENCY:
Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD_5) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. Please see the United States Environmental Protection Agency's (EPA) website for interpretation of percent removal requirements for National Pollutant Discharge Elimination System Permit Application Requirements for Publicly Owned Treatment Works and Other Treatment Works Treating Domestic Sewage @ www.epa.gov/fedrgstr/EPA-WATER/1999/August/Day-04/w18866.htm .

Not Applicable ☒;
Influent monitoring is not being required to determine percent removal.

SANITARY SEWER OVERFLOWS (SSOS), BYPASSES, INFLOW & INFILTRATION (I&I) – PREVENTION/REDUCTION:
Sanitary Sewer Systems (SSSs) are municipal wastewater collection systems that convey domestic, commercial, and industrial wastewater, and limited amounts of infiltrated groundwater and storm water (i.e. I&I), to a POTW. SSSs are not designed to collect large amounts of storm water runoff from precipitation events.

Untreated or partially treated discharges from SSSs are commonly referred to as SSOs. SSOs have a variety of causes including blockages, line breaks, sewer defects that allow excess storm water and ground water to overload the system, lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. A SSOs is defined as an untreated or partially treated sewage release from a SSS. SSOs can occur at any point in an SSS, during dry weather or wet weather. SSOs include overflows that reach waters of the state. SSOs also include overflows out of manholes and onto city streets, sidewalks, and other terrestrial locations. SSSs can back up into buildings, including private residences. When sewage backups are caused by problems in the publicly-owned portion of an SSS, they are considered SSOs.

Not Applicable ☒;
This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

SCHEDULE OF COMPLIANCE (SOC):

A schedule of remedial measures included in a permit, including an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit.

Not Applicable ☒;
This permit does not contain a SOC.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP):
In accordance with 40 CFR 122.44(k) *Best Management Practices (BMPs)* to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities: (2) Authorized under section 402(p) of the CWA for the control of storm water discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

In accordance with the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Industrial Operators*, (Document number EPA 833-B-09-002) [published by the United States Environmental Protection Agency (USEPA) in February 2009], BMPs are measures or practices used to reduce the amount of pollution entering (regarding this operating permit) waters of the state. BMPs may take the form of a process, activity, or physical structure.

Additionally in accordance with the Storm Water Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of storm water discharges.

Not Applicable ☒;
At this time, the permittee is not required to develop and implement a SWPPP.

VARIANCE:
As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

Not Applicable ☒;
This operating permit is not drafted under premises of a petition for variance.

WASTELOAD ALLOCATIONS (WLA) FOR LIMITS:
As per [10 CSR 20-2.010(78)], the amount of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined total amount of pollutant that may be discharged into that stream without endangering its water quality.

Not Applicable ☒;
Wasteload allocations were not calculated.

WLA MODELING:
There are two general types of effluent limitations, technology-based effluent limits (TBELs) and water quality based effluent limits (WQBELs). If TBELs do not provide adequate protection for the receiving waters, then WQBEL must be used.

Not Applicable ☒;
A WLA study was either not submitted or determined not applicable by Department staff.

WATER QUALITY STANDARDS:
Per [10 CSR 20-7.031(3)], General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, [40 CFR 122.44(d)(1)] directs the Department to establish in each NPDES permit to include conditions to achieve water quality established under Section 303 of the Clean Water Act, including State narrative criteria for water quality.

WHOLE EFFLUENT TOXICITY (WET) TEST:

A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with or through synergistic responses when mixed with receiving stream water.

Applicable ☐;
Under the federal Clean Water Act (CWA) §101(a)(3), requiring WET testing is reasonably appropriate for site-specific Missouri State Operating Permits for discharges to waters of the state issued under the National Pollutant Discharge Elimination System (NPDES). WET testing is also required by 40 CFR 122.44(d)(1). WET testing ensures that the provisions in the 10 CSR 20-6.010(8)(A)7. and the Water Quality Standards 10 CSR 20-7.031(3)(D),(F),(G),(I)2.A & B are being met. Under [10 CSR 20-6.010(8)(A)4], the Department may require other terms and conditions that it deems necessary to assure compliance with the Clean Water Act and related regulations of the Missouri Clean Water Commission. In addition the following MCWL apply: §§§644.051.3 requires the Department to set permit conditions that comply with the MCWL and CWA; 644.051.4 specifically references toxicity as an item we must consider in writing permits (along with water quality-based effluent limits, pretreatment, etc…); and 644.051.5 is the basic authority to require testing conditions. WET test will be required by all facilities meeting the following criteria:

Not Applicable ☒;
At this time, the permittee is not required to conduct WET test for this facility.

303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):
Section 303(d) of the federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

A TMDL is a calculation of the maximum amount of a given pollutant that a body of water can absorb before its water quality is affected. If a water body is determined to be impaired as listed on the 303(d) list, then a watershed management plan will be developed that shall include the TMDL calculation

Applicable ☒;
McKenzie Creek is listed on the 2004-2006 Missouri 303(d) List for Low Dissolved Oxygen.

☒ – This facility is considered to be a source of or has the potential to contribute to the above listed pollutant(s).
From the Permit-In-Lieu of TMDL for McKenzie Creek, February 2, 2009:
*An added issue is a significant industrial user to the Piedmont WWTF, Windsor Foods, which discharges a high BOD load to the **WWTF** (historically from 936 to 81 10 mg/L). In the newly issued permit, this discharge is treated as a separate outfall (#002) and the industry must meet city-mandated limits, which are set by ordinance at 300 lbs/day or 360 mg/L at 0.1 MGD. The upgrades the city is planning for the **WWTF** are tied to this low BOD influent stream.*

The land application of sludge authorized by this permit, is not considered to be a contributor to the impairment; the effluent discharge from Windsor Foods is addressed in the City of Piedmont's state operating permit.

Part V – Effluent Limits Determination

Outfall #001
Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supercedes the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
CHLORIDES	MG/KG	9	250			NO	
SODIUM ADSORPTION RATIO (SAR)	RATIO	9	5			NO	
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* - Monitoring requirement only.
** - For DO the Daily Maximum is a Daily Minimum and the Monthly Average is a Monthly Average Minimum.
*** - # of colonies/100mL; the Monthly Average for *E. coli* is a geometric mean.
**** - Parameter not previously established in previous state operating permit.

Basis for Limitations Codes:

1. State or Federal Regulation/Law
2. Water Quality Standard (includes RPA)
3. Water Quality Based Effluent Limits
4. Lagoon Policy
5. Ammonia Policy
6. Dissolved Oxygen Policy
7. Antidegradation Policy
8. Water Quality Model
9. Best Professional Judgment
10. TMDL or Permit in lieu of TMDL
11. WET Test Policy
12. Antidegradation Review

OUTFALL #001 – DERIVATION AND DISCUSSION OF LIMITS:

- **Chlorides.** Retained from previous state operating permit.
- **Sodium Adsorption Ratio (SAR).** Retained from previous state operating permit.
- **Minimum Sampling and Reporting Frequency Requirements**. Sampling and reporting frequency requirements have been retained from previous state operating permit.

Outfall #002-010

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new operating permit terms and conditions that supercedes the terms and conditions, including effluent limitations, of this operating permit.

EFFLUENT LIMITATIONS TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
BOD_5	MG/L		30			YES	WQS
COD	MG/L		*			YES	WQS
TOTAL SUSPENDED SOLIDS	MG/L		30			YES	WQS
TKN AS N	MG/L		*			YES	WQS
AMMONIA AS N	MG/L		2.0			NO	
NITRITE/NITRATE AS N	MG/L		3.0			NO	
CHLORIDES	MG/L		230			YES	WQS
OIL AND GREASE	MG/L		10			YES	WQS
TOTAL PHOSPHOROUS AS P	MG/L		*			YES	WQS
E. COLI	#/100 ML		*			YES	FECAL/WQS
PH	SU		6.5-9.0			YES	WQS
TEMPERATURE	C		*			YES	WQS
TOTAL BORON	MG/L		*			YES	WQS
MONITORING FREQUENCY	Please see Minimum Sampling and Reporting Frequency Requirements in the Derivation and Discussion Section below.						

* - Monitoring requirement only.
** - For DO the Daily Maximum is a Daily Minimum and the Monthly Average is a Monthly Average Minimum.
*** - # of colonies/100mL; the Monthly Average for *E. coli* is a geometric mean.
**** - Parameter not previously established in previous state operating permit.
WQS – Previous permit referenced Water Quality Standards; actual Water Quality Standards are now in the limitations, if applicable.

Basis for Limitations Codes:

7. State or Federal Regulation/Law
8. Water Quality Standard (includes RPA)
9. Water Quality Based Effluent Limits
10. Lagoon Policy
11. Ammonia Policy
12. Dissolved Oxygen Policy
7. Antidegradation Policy
8. Water Quality Model
9. Best Professional Judgment
10. TMDL or Permit in lieu of TMDL
11. WET Test Policy
12. Antidegradation Review

OUTFALL #002-010 – DERIVATION AND DISCUSSION OF LIMITS:

- **BOD_5**. Retained from previous state operating permit.
- **COD**. Retained from previous state operating permit.
- **Total Suspended Solids.** Retained from previous state operating permit.
- **TKN as N**. Retained from previous state operating permit.

- **Ammonia as N.** Retained from previous state operating permit.
- **Chlorides.** Retained from previous state operating permit.
- **Nitrite/Nitrate as N**. Retained from previous state operating permit.
- **E. Coli.** Retained from previous state operating permit.
- **Oil and Grease.** Retained from previous state operating permit.
- **pH**. Retained from previous state operating permit.
- **Total Phosphorous as P.** Retained from previous state operating permit.
- **Temperature.** Retained from previous state operating permit.
- **Total Boron.** Retained from previous state operating permit.
- **Minimum Sampling and Reporting Frequency Requirements**. Sampling and reporting frequency requirements have been retained from previous state operating permit.

Part VI – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

PUBLIC NOTICE:
The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing.

The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit.

For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

DATE OF FACT SHEET: APRIL 4, 2011

COMPLETED BY:

TIM SOUTHARDS
ENVIRONMENTAL ENGINEER
MISSOURI DEPARTMENT OF NATURAL RESOURCES
SOUTHEAST REGIONAL OFFICE
(573)840-9750

ATTACHMENT B

MU GUIDE G 9215
SOIL SAMPLING PASTURES

Nutrient management

AGRICULTURAL
MU Guide

PUBLISHED BY MU EXTENSION, UNIVERSITY OF MISSOURI-COLUMBIA muextension.missouri.edu

Soil Sampling Pastures

John Lory and Steve Cromley
Division of Plant Sciences and Commercial Agriculture Program

Collecting a representative soil sample is an important step in developing a nutrient plan for your farm. The goals of your soil sampling plan should be to

- Identify manageable sized fields with similar characteristics.
- Accurately and cost-effectively determine the nutrient status of those fields.

Highly variable soil fertility levels across a field can make it difficult to collect a good soil sample. With planning, representative soil samples can be obtained from your pasture. Careful, comprehensive soil sampling pays dividends in smarter management decisions and efficient use of fertilizer nutrients.

How should I divide my pastures?

When creating a soil-sampling plan for fields and farms, the objective is to divide fields into areas that you expect to have similar characteristics or that you are likely to manage differently than other parts of the pasture. Typically sampling areas should not exceed 20 acres and can be much smaller. In management-intensive grazing systems, frequently the best strategy is to sample each paddock separately.

Pastures have many sources of variability:

- Animal activities and habits are a huge source of variation in pastures.
  - Areas around winter feeders, shade trees and water sources have higher soil test levels.
  - Manure piles and urine spots have elevated nutrients.
- Natural features such as soil type and topography are important sources in variability, particularly in low-testing and unfertilized fields.
- Human activities can overwhelm natural sources of variability in a field.
  - Nutrient hot spots are often found near old feeding areas and homesteads.
  - Differences in fertilizer patterns can create differences in soil test levels. An indicator of different fertilizer histories can be old or existing fence lines.

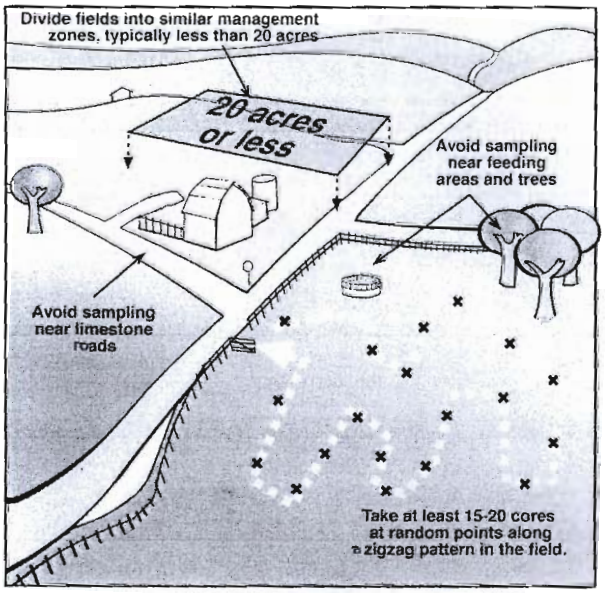


Figure 1. Obtaining a quality soil sample.

  - There is often a band of elevated pH within 150 feet of a gravel road caused by drifting dust from the crushed limestone road surface.

When sampling a paddock or field, avoid sampling in areas that are unrepresentative of the field (Figure 1). Avoid taking cores near shade trees, water sources and winter feeding areas. If you want to know soil test levels in these areas, sample them separately.

How to collect a soil sample

Your objective is to collect 15 to 20 cores from the area to be sampled (Figure 1). You need to collect more cores per field in a pasture than in a row-crop field because there typically is much more variation in a pasture from manure piles and urine spots.

The best approach is to travel across the entire area to be sampled in a zigzag pattern, randomly selecting spots to take a core (Figure 1). Sampling depth is 6 to 7 inches for most objectives in pastures (Figure 2). Do not take too shallow a sample as this will overestimate the soil fertility level in your pasture.

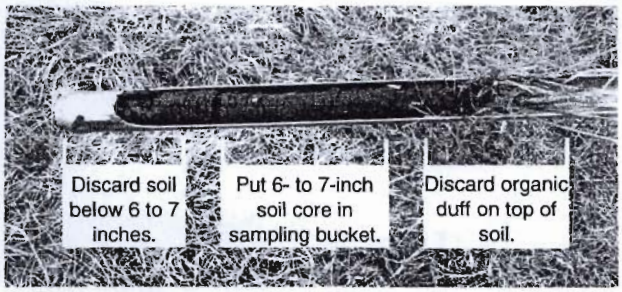


Figure 2. Obtaining a 6- to 7-inch core for soil sampling.

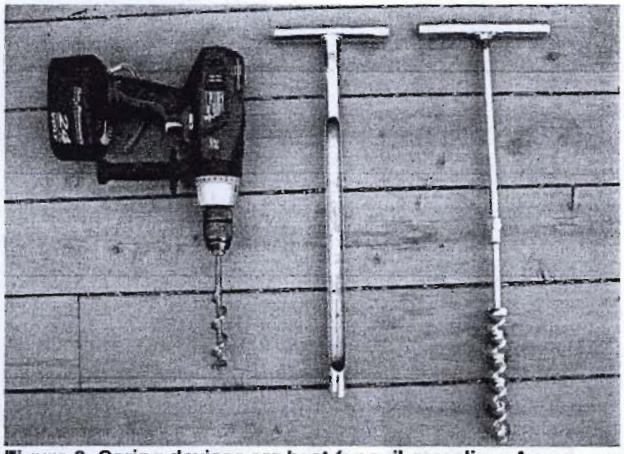


Figure 3. Coring devices are best for soil sampling. Augers are recommended on rocky soils. Hand samplers at least 3 feet long are desirable because they reduce back strain.

Needed equipment for soil sampling includes

- A soil sampler; preferably some type of coring device.
- A clean plastic bucket; e.g., plastic paint bucket.
- A small box or bag; contact your soil testing lab for boxes. Hardware store nail bags work well.
- Map of the field with sampling plan and sample labels.

The best tool for soil sampling is a coring device (Figures 3 and 4). A core sampler works best in soils with few rocks. In rocky soils, some type of auger is the preferred tool. If you are doing a lot of sampling, a power drill with an auger can be efficient. A shovel or spade can be used if a coring device is not available.

Always use clean equipment when collecting soil samples. A plastic bucket should be used for collecting and mixing samples.

It is best to wait at least three months after application of phosphorus fertilizer, lime or manure before taking a soil sample. Sample your pasture every three to five years. It is better to do a more thorough job of sampling with more cores per sample less often than to do a poor job more often. It is also best to sample fields at the same time of year each time you sample.

Figure 4. A power drill facilitates sampling in rocky or dry soils. Use a plastic container with a hole in the middle to collect the soil as the auger pulls it out of the ground. Empty the soil out of the plastic container into the soil sample bucket after each successful attempt to get a 6-inch core.

Avoid sampling near fresh manure piles or recent urine spots. These areas do not represent the bulk of the paddock. It is appropriate to sample in or near older manure piles and urine patches in intensively grazed pastures with a high amount of manure coverage.

Submitting your soil samples

Break up the 15–20 cores and thoroughly mix the soil. Place about 1.5 cups of the mixture into a soil sample box or plastic bag and discard the excess. If the soil is too wet to mix thoroughly, the sample can be set out on a bench and allowed to air dry before mixing.

Label the sample with field and subfield names. Soil sample boxes and soil information forms can be obtained from private soil testing labs or your local University Extension center or by contacting:

Soil and Plant Testing Services
Department of Agronomy
23 Mumford Hall
University of Missouri
Columbia, MO 65211
(573) 882-3250 or (573) 882-0623
http://soiltest.psu.missouri.edu

Soil samples can also be submitted to your local Extension center or directly to a University or private soil testing lab. Be sure to use a lab that has been accredited by Missouri Soil Testing Association (MSTA). A list of accredited labs is available on the Web at http://www.soiltest.psu.missouri.edu/MSTAlabs.htm.

Also from Extension Publications 1-800-292-0969

G 9112 *Interpreting Missouri Soil Test Reports*
G 9217 *Soil Sampling Hayfields and Row Crops*

UNIVERSITY OF MISSOURI Extension

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ATTACHMENT C

CAS LABORATORIES
CHAIN-OF-CUSTODY FORM

Continental Analytical Services, Inc.

525 N. 8th Street, Salina, KS 67401
(785)827-1273 (800)535-3076 Fax (785)823-7830
www.cas-lab.com

CHAIN OF CUSTODY RECORD

Continental Order Number: _____

Client/Reporting Information	Invoice Information	PARAMETERS/CONTAINER TYPE	COMMENTS
Company Name:	Company Name:		
Address:	Address:		
City: State: Zip:	City: State: Zip:		
Contact:	Contact:		
E-mail:	E-mail:		
Phone Number: Fax Number:	Phone Number: Fax Number:		

Sampler's Name:(Printed)	Sampler's Name:(Signature)	Purchase Order Number:
Project Number:	Project Name:	

SAMPLE IDENTIFICATION (30 Characters or less)	Matrix (Sample Type)	Regulatory Program	Date Sampled	Time Sampled	C-Composite G-Grab	Total Containers	Number of Preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	OTHER

Matrix (Sample Type): **DW**=Drinking Water, **GW**=Ground Water, **WW**=Waste Water, **W**=Wipe, **S**=Solid/Soil, **SL**=Sludge, **A**=Air, **OL**= Oil/Organic Liquid, **O**=Other

Regulatory Program: **N**=NPDES, **R**=RCRA, **D**=Drinking Water, **SL**=503 Sludge, **O**=Other

(Please note if non-standard turnaround. Rush & Emergency subject to additional charge)
Standard TAT: (15 working days) Rush TAT: (5 working days) Emergency TAT: (3 working days)

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	DATE:	TIME:
RECEIVED AT LAB BY:	DATE:	TIME:	SHIPPED VIA: AIRBILL:	SEAL #: SEAL DATE:	

ATTACHMENT D

SITE INFORMATION SHEETS

SITE INFORMATION SHEET - WINDSOR FOODS SLUDGE APPLICATION

SITE NAME: Hawkins

This form is required by Section C. (Special Conditions) 9.u.(3) - page 13 of 14.
The form shall be completed and provided to the land owner on an annual basis.

LAND OWNER INFORMATION

Name: Jim Hawkins
Address: Route 1, Box 20, Patterson, MO 63956
Telephone No.: 573-856-4257

SITE INFORMATION

Legal Description: SW 1/4, NW 1/4 and SW 1/4, NE 1/4 and NW 1/4, SE 1/4 and SE 1/4, NW 1/4 Section 19, T 29N, R 5E, Wayne County, Missouri.
Acreage: 115.5 acres
Buffer Zones:
1) 300 ft. from down-gradient pond, lake, sinkhole, losing stream, or water supply withdrawal.
2) 150 ft. from dwelling.
3) 100 ft. from a gaining stream.
4) 50 ft. from a wet weather gaining stream and tributary.
5) 50 ft. from property line.

SLUDGE NUTRIENT CONTENT

Sample Date	Conc. - mg/kg as N		
	TKN	Nitrate	PAN*
3/1/2011	2060	< 0.2	1236
5/4/2011	1550	5	935
7/28/2011	2000	< 2	1200
9/13/2011	1800	< 0.2	1080

* - PAN is equal to (0.6 x TKN) + (0.9 x Nitrate)

HISTORICAL SUMMARY OF AND PROJECTED NUTRIENT LOADING

	lb./acre Plant Available Nitrogen (PAN) applied by tract number									
Year	1	2	3	4	5	6	7	8	9	10
2006	19.8	3.7	22	45	54	20	45	31	151	33
2007	67.7	78.7	53.3	20.1	18.7	26.7	0	54.35	0	85.9
2008	37	0	36.1	25.7	31.8	25.5	38.4	37.8	5.4	89.3
2009	35.4	34.8	34.4	41.3	47.4	40	41.9	20	30.8	40.4
2010	0	3.5	11.8	42.6	15.4	6.8	64.4	21	43.4	59.6
2011	0	8	6.7	38.6	15.8	5.8	55.3	18.1	37.3	51.1
2012*	99.8	108.4	97.7	37.4	81.3	107.4	0	80.9	39.3	0
Acres:	4	5.1	9.1	7.7	6.2	5.3	7.6	25.7	23.4	21.4

* - projected maximum loading

LAST UPDATED: December, 2011

SITE INFORMATION SHEET - WINDSOR FOODS SLUDGE APPLICATION

SITE NAME: Sutton

This form is required by Section C. (Special Conditions) 9.u.(3) - page 13 of 14.
The form shall be completed and provided to the land owner on an annual basis.

LAND OWNER INFORMATION

Name: Mike Sutton
Address: Rt. 2, Box 2541; Piedmont, MO 63957
Telephone No.: 573-223-2128

SITE INFORMATION

Legal Description: SW 1/4, SW 1/4 Sec 29, T 30N, R 3E, Reynolds County
SE 1/4, SE 1/4 Sec 30, T 30N, R 3E, Reynolds County
NE 1/4, NE 1/4 Sec 31, T 30N, R 3E, Reynolds County
NW 1/4, NW 1/4 Sec 32, T 30N, R 3E, Reynolds County

Acreage: 38 acres

Buffer Zones:
1) 300 ft. from down-gradient pond, lake, sinkhole, losing stream, or water supply withdrawal.
2) 150 ft. from dwelling.
3) 100 ft. from a gaining stream.
4) 50 ft. from a wet weather gaining stream and tributary.
5) 50 ft. from property line.

SLUDGE NUTRIENT CONTENT

Sample Date	Conc. - mg/kg as N		
	TKN	Nitrate	PAN*
3/1/2011	2060	< 0.2	1236
5/4/2011	1550	5	935
7/28/2011	2000	< 2	1200
9/13/2011	1800	< 0.2	1080

* - PAN is equal to (0.6 x TKN) + (0.9 x Nitrate)

HISTORICAL SUMMARY OF AND PROJECTED NUTRIENT LOADING

Year	PAN Loading (lb.acre)
2012*	40

* - projected maximum loading
Note: No sludge has been applied prior to 2012.

LAST UPDATED: December, 2011

SITE INFORMATION SHEET - WINDSOR FOODS SLUDGE APPLICATION

SITE NAME: Ruble

This form is required by Section C. (Special Conditions) 9.u.(3) - page 13 of 14.
The form shall be completed and provided to the land owner on an annual basis.

LAND OWNER INFORMATION

Name: Lester Ruble Farms, Inc.
Address: HCR 77, Box 14, Annapolis, MO 63620
Telephone No.: 573-598-4352

SITE INFORMATION

Legal Description: Sec 9, T 31N, R 4E, Iron County
Acreage: 132 acres
Buffer Zones:
1) 300 ft. from down-gradient pond, lake, sinkhole, losing stream, or water supply withdrawal.
2) 150 ft. from dwelling.
3) 100 ft. from a gaining stream.
4) 50 ft. from a wet weather gaining stream and tributary.
5) 50 ft. from property line.

SLUDGE NUTRIENT CONTENT

Sample Date	Conc. - mg/kg as N		
	TKN	Nitrate	PAN*
3/1/2011	2060	< 0.2	1236
5/4/2011	1550	5	935
7/28/2011	2000	< 2	1200
9/13/2011	1800	< 0.2	1080

* - PAN is equal to (0.6 x TKN) + (0.9 x Nitrate)

HISTORICAL SUMMARY OF AND PROJECTED NUTRIENT LOADING

Year	PAN Loading (lb.acre)
2012*	40

* - projected maximum loading
Note: No sludge has been applied prior to 2012.

LAST UPDATED: December, 2011

SITE INFORMATION SHEET - WINDSOR FOODS SLUDGE APPLICATION

SITE NAME: Tooke

This form is required by Section C. (Special Conditions) 9.u.(3) - page 13 of 14.
The form shall be completed and provided to the land owner on an annual basis.

LAND OWNER INFORMATION

Name: Ryan Tooke
Address: Rt. 1, Box 43A, Patterson, MO 63956
Telephone No.: 573-856-4328

SITE INFORMATION

Legal Description: Sec 8 and 9, T 28N, R 5E, Wayne County
Acreage: 45 acres
Buffer Zones: 1) 300 ft. from down-gradient pond, lake, sinkhole, losing stream, or water supply withdrawal.
2) 150 ft. from dwelling.
3) 100 ft. from a gaining stream.
4) 50 ft. from a wet weather gaining stream and tributary.
5) 50 ft. from property line.

SLUDGE NUTRIENT CONTENT

Sample Date	Conc. - mg/kg as N		
	TKN	Nitrate	PAN*
3/1/2011	2060	< 0.2	1236
5/4/2011	1550	5	935
7/28/2011	2000	< 2	1200
9/13/2011	1800	< 0.2	1080

* - PAN is equal to (0.6 x TKN) + (0.9 x Nitrate)

HISTORICAL SUMMARY OF AND PROJECTED NUTRIENT LOADING

Year	PAN Loading (lb.acre)
2011	40.4
2012*	39.6

* - projected maximum loading
Note: No sludge has been applied prior to 2011.

LAST UPDATED: December, 2011

SITE INFORMATION SHEET - WINDSOR FOODS SLUDGE APPLICATION

SITE NAME: Hill

This form is required by Section C. (Special Conditions) 9.u.(3) - page 13 of 14.
The form shall be completed and provided to the land owner on an annual basis.

LAND OWNER INFORMATION

Name: Robert Hill
Address: Route 1, Box 28, Patterson, MO 63956
Telephone No.: 573-856-4596

SITE INFORMATION

Legal Description: SE 1/4, SE 1/4, Sec 18, T 28N, R 5E, Wayne County.
Acreage: 27 acres
Buffer Zones:
1) 300 ft. from down-gradient pond, lake, sinkhole, losing stream, or water supply withdrawal.
2) 150 ft. from dwelling.
3) 100 ft. from a gaining stream.
4) 50 ft. from a wet weather gaining stream and tributary.
5) 50 ft. from property line.

SLUDGE NUTRIENT CONTENT

Sample Date	Conc. - mg/kg as N		
	TKN	Nitrate	PAN*
3/1/2011	2060	< 0.2	1236
5/4/2011	1550	5	935
7/28/2011	2000	< 2	1200
9/13/2011	1800	< 0.2	1080

* - PAN is equal to (0.6 x TKN) + (0.9 x Nitrate)

HISTORICAL SUMMARY OF AND PROJECTED NUTRIENT LOADING

Year	PAN Loading (lb.acre)
2012*	39.6

* - projected maximum loading
Note: No sludge has been applied prior to 2011.

LAST UPDATED: December, 2011

SITE INFORMATION SHEET - WINDSOR FOODS SLUDGE APPLICATION

SITE NAME: Smith

This form is required by Section C. (Special Conditions) 9.u.(3) - page 13 of 14.
The form shall be completed and provided to the land owner on an annual basis.

LAND OWNER INFORMATION

Name: Jason Smith
Address: Route 1, Box 33, Patterson, MO 63956

SITE INFORMATION

Legal Description: E 1/2, Sec 36, T 28N, R 4E, Wayne County.
Acreage: 60 acres
Buffer Zones:
1) 300 ft. from down-gradient pond, lake, sinkhole, losing stream, or water supply withdrawal.
2) 150 ft. from dwelling.
3) 100 ft. from a gaining stream.
4) 50 ft. from a wet weather gaining stream and tributary.
5) 50 ft. from property line.

SLUDGE NUTRIENT CONTENT

Sample Date	Conc. - mg/kg as N		
	TKN	Nitrate	PAN*
3/1/2011	2060	< 0.2	1236
5/4/2011	1550	5	935
7/28/2011	2000	< 2	1200
9/13/2011	1800	< 0.2	1080

* - PAN is equal to (0.6 x TKN) + (0.9 x Nitrate)

HISTORICAL SUMMARY OF AND PROJECTED NUTRIENT LOADING

Year	PAN Loading (lb.acre)
2012*	39.6

* - projected maximum loading
Note: No sludge has been applied prior to 2011.

LAST UPDATED: December, 2011

ATTACHMENT E

FIELD DATA DAILY LOG SHEET

SLUDGE APPLICATION DAILY FIELD LOG SHEET - WINDSOR FOODS

Application Date	Site Identification*	Vol. of Sludge Applied (gal)	Soil Moisture Conditions	Initials

* Include site name (and tract # where appropriate)

Form created December, 2011

ATTACHMENT F

DETAILED DAILY LOG FORM

WINDSOR FOODS SLUDGE APPLICATION DAILY LOG SHEET - DETAILED

Application Date	Site Identification*	Area (acres)	Sludge Volume Applied (gal)	Sludge Mass Applied (dry tons)	PAN Mass Applied (lb.)	Sludge Mass Applied (dry tons/acre)	PAN Mass Applied (lb./acre)

* Include site name (and tract # where appropriate)

Form created December, 2011

ATTACHMENT G

DAF SLUDGE STORAGE TANK INSPECTION FORM

SLUDGE STORAGE TANK INSPECTION FORM - WINDSOR FOODS WASTEWATER TREATMENT PLANT

Inspection Date	Visual Observations	Follow-up Action Taken	Sludge Level*	Inspected By

* - Measured as feet from overflow.

Form created December, 2011

ATTACHMENT H

SLUDGE APPLICATION EQUIPMENT AND APPLICATION SITE INSPECTION FORM

SLUDGE APPLICATION EQUIPMENT AND APPLICATION SITE INSPECTION FORM - WINDSOR FOODS

Inspection Date	Visual Observations		Follow-up Action Taken	Inspected By
	Land Application Equipment	Application Site*		

* Include site name (and tract # where appropriate)

Form created December, 2011

ATTACHMENT I

TRAINING RECORD FORM

WINDSOR FOODS SLUDGE MANAGEMENT TRAINING RECORD FORM

Date of Training: _____

Name	Signature

Training Provided By: _____