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-0002828
Owner:	Dairy Farmers of America, Inc.
Address:	10220 North Ambassador Drive, Kansas City, MO 64153
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Dairy Farmers of America, Cabool, MO
Facility Address:	950 Metrecal Trace Street, Cabool, MO 65689
Legal Description:	See Pages 2 - 3
UTM Coordinates:	See Pages 2 - 3
Receiving Stream:	See Pages 2 - 3
First Classified Stream and ID:	See Pages 2 - 3
USGS Basin & Sub-watershed No.:	See Pages 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

See Pages 2 - 3

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

February 1, 2017
Effective Date

Steven Feeler, Acting Director, Division of Environmental Quality

December 31, 2021
Expiration Date

David J. Lamb, Acting Director, Water Protection Program

FACILITY DESCRIPTION (continued)

Dairy Farmers of America's wastewater passes through a trickling filter, a clarifier, an oxidation ditch, a final clarifier, and is discharged to the Cabool Wastewater Treatment Plant permit #MO0026301. The industrial sludge generated from the intermediate clarifier passes through a waste clarifier and stored in two sludge storage tanks, and is land applied. Overflow from tanks goes back to treatment facility.

Permitted Feature #001 –Permitted under MOR130154

Permitted Feature #002 – Eliminated

Permitted Feature #003 – Permitted under MOR130154

Permitted Feature #004 – Permitted under MOR130154

Permitted Feature #005 – Two steel storage tanks - Industrial Sludge – SIC #2023, #2026, and #2032
Legal Description: NW ¼, SW ¼, Sec. 12, T28N, R11W, Texas County
UTM Coordinates: X = 579726, Y = 4108564
Receiving Stream: Tributary to Big Piney River
First Classified Stream and ID: Big Piney River (P) (1578) 303(d)
USGS Basin & Sub-watershed No.: 10290202-0101
Storage Tank #1:
Storage volume: 83,000 gallons
Storage capacity: 20 days
Storage Tank #2:
Storage volume: 132,000 gallons
Storage capacity: 33 days

Permitted Feature #006 – Land Application Site GWA, 100 acres
Legal Description: S ½, SE ¼, Sec. 11, T28N, R11W, Texas County
UTM Coordinates: X = 578961, Y = 4108153
Receiving Stream: Tributary to Big Piney River (C)
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.:10290202-0101

Permitted Feature #007 – Land Application Site BWB; 160 acres
Legal Description: NE ¼, Sec. 14, T28N, R11W, Texas County
UTM Coordinates: X = 579025, Y = 4107504
Receiving Stream: Tributary to Big Piney River (C)
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.: 10290202-0101

Permitted Feature #008 – Land Application Site BWC, 160 acres
Legal Description: N ½, Sec. 23, T28N, R11W, Texas County
UTM Coordinates: X = 578499, Y = 4105673
Receiving Stream: Tributary to Big Piney River (C)
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.:10290202-0101

Permitted Feature #009 – Land Application Site JBA, 27 acres
Legal Description: SW ¼, Sec. 26, T28N, R11W, Texas County
UTM Coordinates: X = 578285, Y = 4103478
Receiving Stream: Tributary to Hungry Creek (C)
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.:11010006-0101

FACILITY DESCRIPTION (continued)

Permitted Feature #010 – Land Application Site JBB, 160 acres
Legal Description: SW ¼, SW ¼, Sec. 25, T28N, R11W, Texas County
UTM Coordinates: X = 579762, Y = 4103366
Receiving Stream: Tributary to Beeler Branch (C)
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.:10290202-0101

Permitted Feature #011 – Land Application Site JWA, 40 acres
Legal Description: N ½, NW ¼, Sec. 20, T29N, R10W, Texas County
UTM Coordinates: X = 582954, Y = 4115851
Receiving Stream: Tributary to Big Piney River (C)
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.:10290202-0103

Permitted Feature #012 – Land Application Site JWB, 40 acres
Legal Description: E ½, SE ¼, Sec. 17, T29N, R10W, Texas County
UTM Coordinates: X = 583959, Y = 4116537
Receiving Stream: Tributary to Big Piney River (C)
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.: 10290202-0103

Permitted Feature #013 – Land Application Site JWD, 100 acres
Legal Description: S ½, Sec. 17, T29N, R10W, Texas County
UTM Coordinates: X = 583359, Y = 4116612
Receiving Stream: Tributary to Big Piney River (C)
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.:10290202-0103

Permitted Feature #014 – Land Application Site JWE, 200 acres
Legal Description: W ½, SW ¼, Sec 9, T29N, R10W, Texas County
UTM Coordinates: X = 584267, Y = 4118083
Receiving Stream: Tributary to Big Piney River (C)
First Classified Stream and ID: 8-20-13 MUDD V1.0 (C) (3960)
USGS Basin & Sub-watershed No.:10290202-0103

Permitted Feature #015 – Land Application Site LTA, 27 acres
Legal Description: NW ¼, Sec 32, T29N, R10W, Texas County
UTM Coordinates: X= 582934, Y = 4112332
Receiving Stream: Big Piney River (P) (1578) 303(d)
First Classified Stream and ID: Big Piney River (P) (1578) 303(d)
USGS Basin & Sub-watershed No.10290202-0103

Land Application
Actual Annual Sludge Production: 1,172,500 gallons per year, 141 dry tons per year
Application Rate: Plant Available Nitrogen (PAN)
Equipment Type: Tank Truck
Equipment Capacity: 3,500 gallons tank truck
Vegetation: Pasture

PERMITTED FEATURE #005	TABLE A-1. 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
Sludge Land Applied See (Note 1, Page 4)						
pH	SU	*			biannual**	grab
Total Kjeldahl Nitrogen as N	mg/L	*			biannual**	grab
Ammonia Nitrogen as N	mg/L	*			biannual**	grab
Nitrite plus Nitrate as N	mg/L	*			biannual**	grab
Total Phosphorus as P	mg/L	*			biannual**	grab
Percent Solids	percent	*			biannual**	grab
Arsenic (total recoverable)	mg/kg***	*			once/year	grab
Cadmium (total recoverable)	mg/kg***	*			once/year	grab
Copper (total recoverable)	mg/kg***	*			once/year	grab
Lead (total recoverable)	mg/kg***	*			once/year	grab
Mercury (total recoverable)	mg/kg***	*			once/year	grab
Molybdenum (total recoverable)	mg/kg***	*			once/year	grab
Nickel (total recoverable)	mg/kg***	*			once/year	grab
Selenium (total recoverable)	mg/kg***	*			once/year	grab
Zinc (total recoverable)	mg/kg***	*			once/year	grab

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE JANUARY 28, 2018.

PERMITTED FEATURE #006- #015	TABLE A-2. 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
Sludge Land Application Operational Monitoring						
Amount Applied	Gallons	*			daily	total
Application Area	Acres	*			daily	total
Application Rate	in./acre	*			daily	total
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE APRIL 28, 2017.						
Soil Monitoring (See Note 2, Page 4)						
pH – Units	SU	*			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 AS REQURED BY ANNUAL REPORT; THE FIRST REPORT IS DUE JANUARY 28, 2018.						

* Monitoring requirement only
** Sample once during January – June and once during July – December.
*** Dry weight basis. Monitoring is for metals ceiling concentrations for land application.

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

Note 2 –See Special Condition 20e Soil Monitoring for additional guidance.

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 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
E. coli	#/100mL

SPECIAL CONDITIONS (continued)

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.
   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;

SPECIAL CONDITIONS (continued)

(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.

7. 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).

8. 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.

9. The berms of the storage basin(s) shall be mowed and kept free of any deep-rooted vegetation, animal dens, or other potential sources of damage to the berms.

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.

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. The facility shall ensure that adequate provisions are provided to prevent surface water intrusion into the storage basin(s) and to divert stormwater runoff around the storage basin(s) and protect embankments from erosion.

SPECIAL CONDITIONS (continued)

18. 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 or unpermitted contract haulers to those sites listed in the "Facility Description" of this permit. Land application sites where applications are conducted by permitted contract haulers 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. The O&M Manual shall include the name and permit number (if permitted) of the contract hauler and all land application site(s) listed in this permit.
    c. Public Access Restrictions. This permit does not authorize application sludge to public use areas.
    d. 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.

19. 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 wastewater and/or 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.
    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.

SPECIAL CONDITIONS (continued)

20. 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. Nitrogen based application. The amount of sludge to be applied shall be adjusted annually based on the Plant Available Nitrogen (PAN) calculation using the current sludge nutrient analysis and the following:
   (1) 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.
   (2) 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 1,000 pounds oil/acre. Avoid heavy application of oil and grease within 30 days before planting of row crops.

21. 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.
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.

22. 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-0002828
DAIRY FARMERS OF AMERICA, CABOOL, MO

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, sludge stored in tanks and land applied– SIC #2023, #2026, and #2032

Facility Description:
Dairy Farmers of America's wastewater passes through a trickling filter, a clarifier, an oxidation ditch, a final clarifier, and is discharged to the Cabool Wastewater Treatment Plant permit #MO0026301). The industrial sludge generated from the intermediate clarifier passes through a waste clarifier and stored in two sludge storage tanks, and is land applied. Sludge is lime stabilized.
Have any changes occurred at this facility or in the receiving water body that effects effluent limit derivation?

✓ No.

Application Date: 02/18/16
Expiration Date: 08/03/16

PERMITTED FEATURE(S) TABLE:

PERMITTED FEATURE	TREATMENT LEVEL	EFFLUENT TYPE
#005-#015	Land Application	Industrial sludge

Facility Performance History:
This facility was last inspected on January 4, 2011 and was found to be in compliance.

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 Big Piney River	n/a	n/a	General Criteria		10290202-0101
Big Piney River	P	1578	AQL, DWS, IRR, LWW, SCR, WBCA, HHP		
8-20-13 MUDD V1.0	C	3960	AQL, IRR, LWW, SCR, WBCB, HHP		
Big Piney River	P	1578	AQL, DWS, IRR, LWW, SCR, WBCA, HHP		10290202-0103
8-20-13 MUDD V1.0	C	3960	AQL, IRR, LWW, SCR, WBCB, HHP		
Tributary to Hungry Creek	n/a	n/a	General Criteria		110600060101
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. http://dnr.mo.gov/env/wpp/waterquality/303d/303d.htm

✓ Applicable; Big Piney River is listed on the 2010 Missouri 303(d) List for dissolved oxygen.

✓ This facility is not considered to be a source of the above listed pollutant(s) or considered to contribute to the impairment of Big Piney River.

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 or TMDL may be developed. The TMDL shall include the WLA calculation. http://dnr.mo.gov/env/wpp/tmdl/

✓ Not applicable; this facility is not associated with a TMDL.

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.

✓ 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.

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.

✓ Not applicable; This condition is not applicable to the permittee for this facility.

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 permitted 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 calculations, 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 of 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 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 by passing.

Part IV – Permit Limits Determination

All Permitted Features – Emergency Discharge
There are no effluent limits associated with All Permitted Features 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	*			YES	***
Total Suspended Solids	mg/L	*			YES	***
Ammonia as N	mg/L	*			NO	***
pH	SU	*			YES	***
Oil & Grease	mg/L	*			YES	***
E.coli	**	*			YES	***
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	
E.coli	once/day while discharging	

PERMITTED FEATURE #005 –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

STORAGE BASIN OPERATIONAL MONITORING TABLE:

PARAMETER	UNIT	BASIS FOR LIMITS	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
SLUDGE							
pH	SU	1	*				
Total Kjeldahl Nitrogen	mg/L	1	*				
Ammonia Nitrogen as an	mg/L	1	*				
Nitrate Nitrogen as N	mg/L	1	*				
Percent Solids	percent	1	*				
Arsenic	mg/kg	1					
Cadmium	mg/kg	1					
Copper	mg/kg	1					
Lead	mg/kg	1					
Mercury	mg/kg	1					
Molybdenum	mg/kg	1					
Nickel	mg/kg	1					
Selenium	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.
** - 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. 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 #005 – 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.]

- **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.]

- **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.]

- **Nickle.** Monitoring requirement only. Monitoring for nickle 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 zinc 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
SLUDGE		
pH	biannual	once/year
Total Kjeldahl Nitrogen	once/quarter	once/year
Ammonia Nitrogen as an	once/quarter	once/year
Nitrate Nitrogen as N	once/quarter	once/year
Percent Solids	once/quarter	once/year
Arsenic	once/year	once/year
Cadmium	once/year	once/year
Copper	once/year	once/year
Lead	once/year	once/year
Mercury	once/year	once/year
Molybdenum	once/year	once/year
Nickel	once/year	once/year
Selenium	once/year	once/year
Zinc	once/year	once/year

PERMITTED FEATURE #006 - #015 – LAND APPLICATION OF WASTEWATER AND/OR 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 FEATURE #006 - #015 – 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.

PERMITTED FEATURE #006 - #015 – LAND APPLICATION FILED SOIL MONITORING

PARAMETER	UNIT	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MODIFIED	PREVIOUS PERMIT LIMITATIONS
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	*

PERMITTED FEATURE #006 - #015 – DERIVATION AND DISCUSSION OF LIMITS:

- **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.]

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 4, 2016 to December 5, 2016. No responses received.

DATE OF FACT SHEET: DECEMBER 21, 2016

COMPLETED BY:

GREG CALDWELL, ENVIRONMENTAL SCIENTIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION – INDUSTRIAL PERMITS UNIT
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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.

Dairy Farmers of America

January 29, 2016

Via Certified Mail

Missouri Department of Natural Resources
Southeast Regional Office
2155 N. Westwood Boulevard
Poplar Bluff, MO 63901

Re: Operating Permit Renewal
Permit Number: MO-0002828

Sir / Madam:

Enclosed you will find the application for renewal of the NPDES/Missouri State Operating Permit for the Dairy Farmers of America (DFA) facility, located at 950 Metrecal Trace, Cabool, Missouri.

Operations at the manufacturing facility remain unchanged from the previous permit application. The addition of lime at the wastewater pretreatment plant for sludge stabilization has been discontinued. However, the process can be reestablished when necessary. During 2015, four of the ten approved land application sites were used. The included soil sample data is for the four sites utilized in 2015.

Please contact me with any questions or to obtain additional information at (417) 829-2856.

Respectfully,

Steve Moore
Manager, Environmental Compliance

Enclosures: Form A – Application for Nondomestic Permit Under Missouri Clean Water Act
Form C – Application for Discharge Permit
Form R – Permit Application for Land Application of Industrial Wastewater Biosolids and Residuals
Appendices A, B, and C

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: NO Payment Received	
DATE RECEIVED: 2-5-16	FEE SUBMITTED: 0

dm QB

Note ► PLEASE READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM. 2/18/16

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- 0002828 Expiration Date August 3, 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
Dairy Farmers of America, Cabool, MO		(417) 962-4243
		FAX: (417) 962-1801
ADDRESS (PHYSICAL): 950 Metrecal Trace Street	CITY: Cabool	STATE: MO / ZIP CODE: 65689

3. OWNER

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE
Dairy Farmers of America, Inc.		(816) 801-6455
		FAX: (816) 801-6456
ADDRESS (MAILING): 10220 North Ambassador Drive	CITY: Kansas City	STATE: MO / ZIP CODE: 64153

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

4. CONTINUING AUTHORITY

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE
Dairy Farmers of America, Inc.		(816) 801-6455
		FAX: (816) 801-6456
ADDRESS (MAILING): 10220 North Ambassador Drive	CITY: Kansas City	STATE: MO / ZIP CODE: 64153

5. OPERATOR

NAME	CERTIFICATE NUMBER	TELEPHONE NUMBER WITH AREA CODE
Mike Dalton	7622-A	(417) 962-0305
		FAX: (417) 863-2401
ADDRESS (MAILING): 701 Metrecal Trace Street	CITY: Cabool	STATE: MO / ZIP CODE: 65689

6. FACILITY CONTACT

NAME	TITLE	TELEPHONE NUMBER WITH AREA CODE
Keith Riley	EH & S Coordinator	(417) 962-1820
	E-MAIL ADDRESS: kriley@dfamilk.com	FAX: (417) 962-1801

7. ADDITIONAL FACILITY INFORMATION

7.1 Legal Description of Outfalls. (Attach additional sheets if necessary.) **See Attached Appendix C Resource Recovery Manual for Outfall 005**

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 2023 and NAICS 311514 002 – SIC 2026 and NAICS 311511
003 – SIC 2032 and NAICS 311422 004 – SIC _____ and NAICS _____

MO 780-1479 (07-14)

RECEIVED
FEB 05 2016
By _____

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			
NA			
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
Jim Hopwood, Vice President Manufacturing	(417) 829-2522
SIGNATURE: Jim Hopwood	DATE SIGNED: 1/30/16

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

Dairy Farmers of America, Cabool, MO

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

MO - 0002828

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 2023 B. SECOND 2026

C. THIRD 2032 D. FOURTH

2.10 FOR EACH OUTFALL GIVE THE LEGAL DESCRIPTION.

OUTFALL NUMBER (LIST) _____ 1/4 _____ 1/4 SEC_____ T_____ R_____ _____COUNTY

Land Application Locations are included in the attached Resource Recovery Manual (Appendix C)

2.20 FOR EACH OUTFALL LIST THE NAME OF THE RECEIVING WATER

OUTFALL NUMBER (LIST)	RECEIVING WATER
Outfall 005 (No Discharge, Land Application)	NA

2.30 BRIEFLY DESCRIBE THE NATURE OF YOUR BUSINESS

Dairy Farmers of America, Cabool, Missouri is a food manufacturing facility that utilizes dry and wet ingredients to blend into a variety of liquid drinks including infant formulas, as well as, adult nutritional and recreational beverages. The mixture of dry and wet ingredients is blended, canned, sterilized, packaged and shipped from the facility. The facility also includes a milk condensing operation taking raw milk and pasteurizing, separating and condensing it for product ingredient use, as well as, outside customer sales.

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.

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.

See Attachments (Appendix A)

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
005	WWTP Sludge	12,313 avg (57,500 max) gal/day	Activated Sludge	3-A & 5-P

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
None			

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)*
University of MO Extension	23 Mumford Hall, MU Columbia, MO 65211	(573) 882-0623	pH, Phosphorus, Potassium, Calcium, and Magnesium
Consulting Analytical Services International	2804 East Battlefield Springfield, MO 65804	(417) 882-1017	Ammonia as Nitrogen, Nitrate/Nitrite as Nitrogen, Chloride, Potassium, Sodium, % Solids, % Ash, Total Kjeldahl Nitrogen, and Phosphorus

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
Jim Hopwood, Vice President Manufacturing	(417) 829-2522
SIGNATURE (SEE INSTRUCTIONS) Jim Hopwood	**DATE SIGNED** 1/30/16

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

NOTE: Outfall 005 is Sludge for Land Application. Effluent is discharged to the local POTW. This section does not apply. See Form R

OUTFALL NO. 005

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)												
B. Chemical Oxygen Demand (COD)												
C. Total organic Carbon (TOC)												
D. Total Suspended Solids (TSS)												
E. Ammonia *(as N)*												
F. Flow	VALUE		VALUE		VALUE					VALUE		
G. Temperature *(winter)*	VALUE		VALUE		VALUE			°C		VALUE		
H. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
I. pH	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM				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)														
B. Chlorine, Total Residual														
C. Color														
D. Fecal Coliform														
E. Fluoride (16984-48-8)														
F. Nitrate - Nitrate *(as N)*														

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)*														
H. Oil and Grease														
I. Phosphorus *(as P)*, Total (7723-14-0)														
J. Sulfate *(as SO^4)* (14808-79-8)														
K. Sulfide *(as S)*														
L. Sulfite (as SO^3) (14265-45-3)														
M. Surfactants														
N. Aluminum, Total (7429-90-5)														
O. Barium, Total (7440-39-3)														
P. Boron, Total (7440-42-8)														
Q. Cobalt, Total (7440-48-4)														
R. Iron, Total (7439-89-6)														
S. Magnesium, Total (7439-95-4)														
T. Molybdenum, Total (7439-98-7)														
U. Manganese, Total (7439-96-5)														
V. Tin, Total (7440-31-5)														
W. Titanium, Total (7440-32-6)														

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)														
2M. Arsenic, Total (7440-38-2)														
3M. Beryllium, Total (7440-41-7)														
4M. Cadmium, Total (7440-43-9)														
5M. Chromium III (16065-83-1)														
6M. Chromium VI (18540-29-9)														
7M. Copper, Total (7440-50-8)														
8M. Lead, Total (7439-92-1)														
9M. Mercury, Total (7439-97-6)														
10M. Nickel, Total (7440-02-0)														
11M. Selenium, Total (7782-49-2)														
12M. Silver, Total (7440-22-4)														
13M. Thallium, Total (7440-28-0)														
14M. Zinc, Total (7440-66-6)														
15M. Cyanide, Amenable to Chlorination														
16M. Phenols, Total														
RADIOACTIVITY														
(1) Alpha Total														
(2) Beta Total														
(3) Radium Total														
(4) Radium 226 Total														

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

Dairy Farmers of America, Cabool, MO

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. 005 ___ ___ ___ ___ ___ ___ ___

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 NA Width 26' Depth 21' Freeboard 8" Berm Width NA % Slope NA
Basin #2: Length NA Width 29.5' Depth 26' Freeboard 8" Berm Width NA % Slope NA

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: 0 Permanent Volume + 83,000 Storage = 83,000 Total volume (gallons)
Basin #2: Gallons: 0 Permanent Volume + 132,000 Storage = 132,000 Total volume (gallons)

2.30 Storage Basin operating levels (report as feet below emergency overflow level)

Basin #1: Maximum water level _____ ft. Minimum operating water level _____ ft.
Basin #2: Maximum water level _____ ft. Minimum operating water level _____ ft.

NOTE: Steel Tanks overflow back to WWTP.

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

Basin #1: 20 days Basin #2: 33 days Basin #3: NA 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. NA

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

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

3.00 LAND APPLICATION SYSTEM **See Attached Resource Recovery Manual Appendix C**

3.10 Number of application sites 10 Total Available Acres 1,074 Minimum & Maximum % field slopes 0-12

Location: ___ ¼ ___ ¼ ___ ¼ ___ Sec. ___ T ___ R _____ County ___ Acres

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: NA Actual for last five years: NA

3.20 Annual sludge production (gallons per year): 575,500 Actual _____ Design
(dry tons per year): 61 Actual _____ Design
Human Population Equivalent: NA Actual _____ Design

3.21 Land Application rate per acre:
Design: _____ dry ton/year _____ dry ton/application _____ No. applications/year
Actual: 0.19 dry ton/year 1.3 dry ton/application 48 No. applications/year
Total amount land applied each year (total all sites) Design _____ dry ton/year Actual 320 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: 3500 Gallons (cubic feet) per hour 200 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:
300 Permanent flowing stream 300 Losing Stream 50 Intermittent (wet weather) stream 300 Lake or pond
50 Property boundary 150 Dwellings 300 Water supply well 150 Other (describe) Wetlands

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 Appendix C Resource Recovery Manual**
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: **Jan 2016**

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

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.)
Wastewater passes through a trickling filter, a clarifier, an oxidation ditch, a final clarifier and discharges to the POTW.
Solids / sludge collected from the treatment processes are collected and land applied. The sludge can be lime stabilized.

4.11 Detailed description of industrial production processes. Also indicate any changes made in last five years. (attach extra sheets as necessary)
Dry and wet ingredients are blended, canned, sterilized, packaged and shipped from the facility. Fresh, raw milk is received at the facility and condensed, pasteurized, and separated for use as product ingredients.

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

Whole milk, liquid sucrose, blended fats & oils, dry proteins, carbohydrates and minerals. Caustic and acidic cleaning chemicals are used throughout the manufacturing plant for sanitation.

4.31 Attach following FORMS for wastewater to be land applied.

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 Appendix B**

Total area sampled is 507 acres. Each composite sample covers 27-160 acres. Each composite consists of 7+ subsamples.

Sample depth: ☑ 0-6 inches ☐ 0-12 inches ☐ Other (describe) _____

Pollutant	Concentration (mg/kg or ppm)			Pounds/ Acre	No. Composite Samples	Sample Period
	Minimum	Maximum	Average			
Organic Nitrogen as N	See Attached					
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	830	830			comp	1	truck	2015
Arsenic	<3.8	<3.8			comp	1	truck	2015
Beryllium	<1.9	<1.9			comp	1	truck	2015
Cadium	<1.9	<1.9			comp	1	truck	2015
Chromium	16.2	16.2			comp	1	truck	2015
Copper	165	165			comp	1	truck	2015
Fluoride	7.6	7.6			comp	1	truck	2015
Lead	3.8	3.8			comp	1	truck	2015
Manganese	55.1	55.1			comp	1	truck	2015
Mercury	<1.5	<1.5			comp	1	truck	2015
Molybdenum	2.6	2.6			comp	1	truck	2015
Nickel	14	14			comp	1	truck	2015
Selenium	<3.8	<3.8			comp	1	truck	2015
Silver	<1.9	<1.9			comp	1	truck	2015
Tin	70.2	70.2			comp	1	truck	2015
Zinc	638	638			comp	1	truck	2015

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	3,650	92,500	47,820		comp	12	truck	2015
Ammonia Nitrogen as N	3,090	11,300	6,936		comp	12	truck	2015
Nitrate Nitrogen as N	1	406	167		comp	12	truck	2015
Total Nitrogen as N	11,600	97,000	55,258		comp	12	truck	2015
Plant Available Nitrogen (PAN)	6,260	21,700	14,691		comp	12	truck	2015
Total Phosphorus as P	1,280	26,600	16,820		comp	4	truck	2015
Boron	45.3	45.3			comp	1	truck	2015
Chlorides	280	155,000	42,460		comp	4	truck	2015
Sodium	7,800	20,000	12,413		comp	4	truck	2015
COD								
TPH								
Total Suspended Solids	0.1%	22.1%	3.1%		grab	193	truck	2015
Oil & Grease								
Sodium Absorption Ration (SAR)								
pH (standard units)	6.7	7.5	6.9		grab	193	truck	2015

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					
NA								

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	NA	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)
SIGNATURE	DATE SIGNED
OWNER OR AUTHORIZED REPRESENTATIVE – Name and Official Title (TYPE OR PRINT)	TELEPHONE NUMBER (area code and number)
Jim Hopwood, Vice President Manufacturing	(417) 829-2522
SIGNATURE Jim Hopwood	DATE SIGNED 1/30/16

Attachments

Dairy Farmers of America – Cabool, MO

NPDES Permit Renewal 2016

APPENDIX A

Site Map

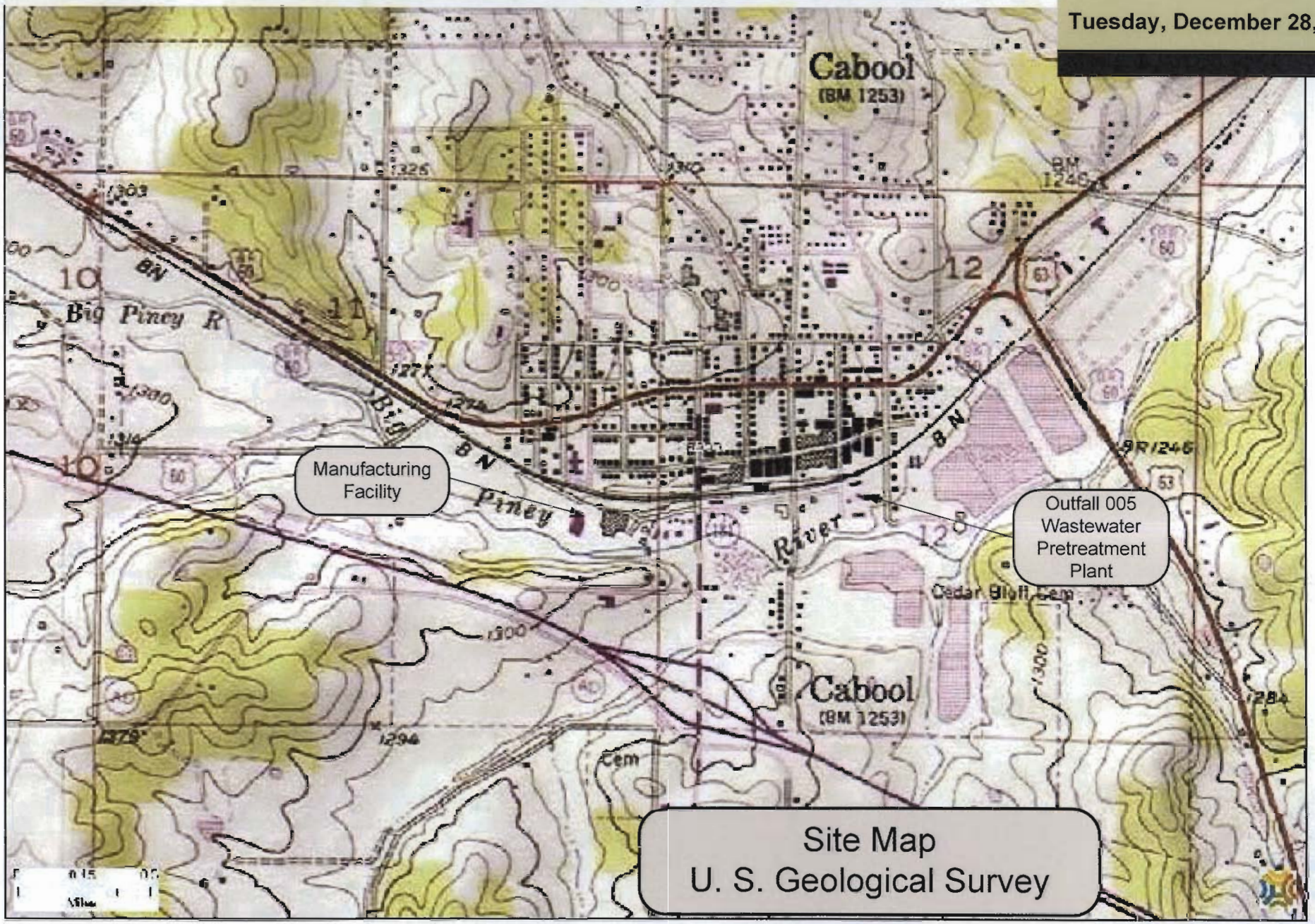
Water Use Flow Diagram

Wastewater Treatment Plant Schematic

Outfall 005 Land Application Areas

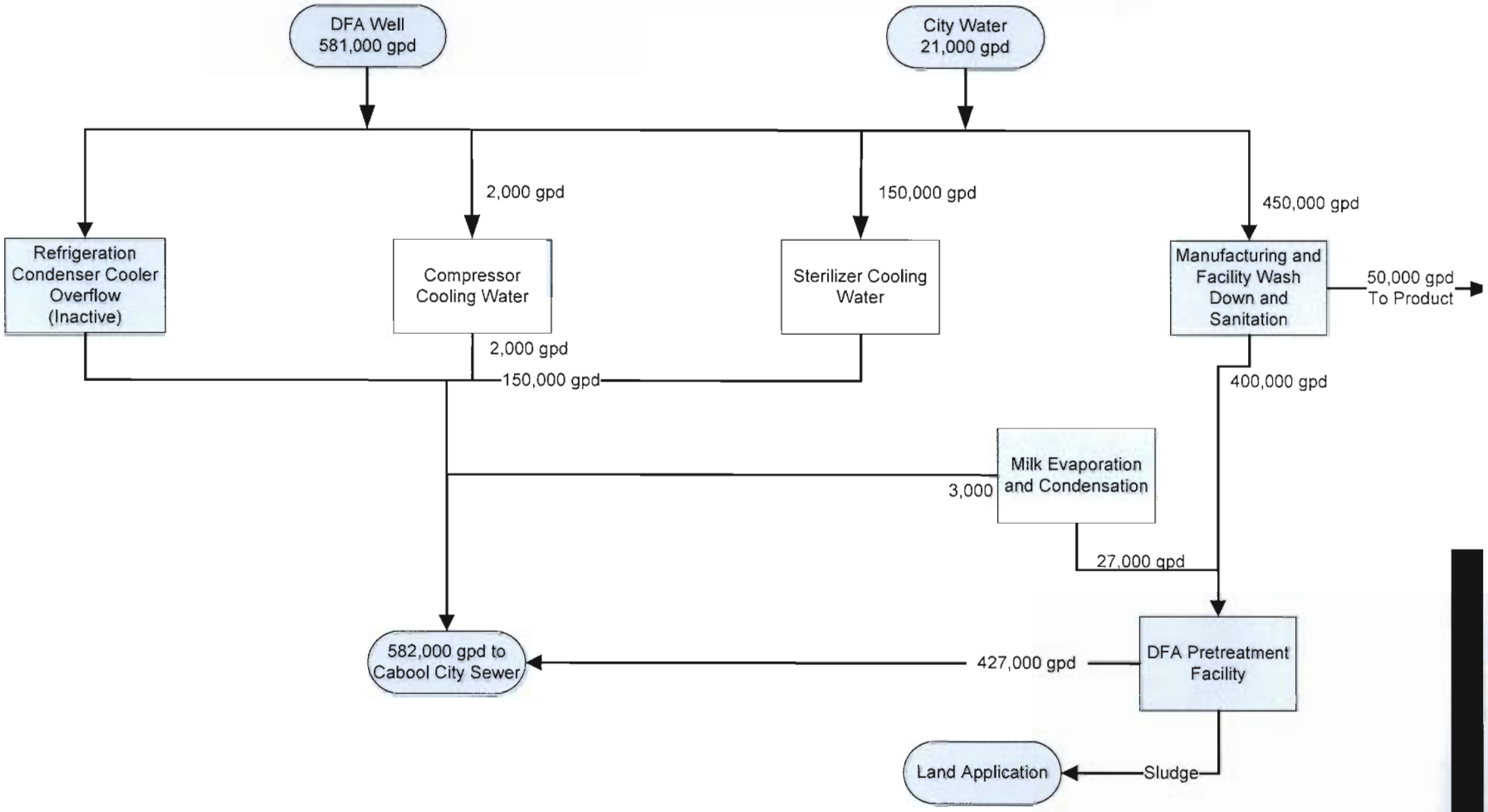
Dairy Farmers of America, Cabool Facility

Tuesday, December 28, 2015



Dairy Farmers of America, Cabool Facility

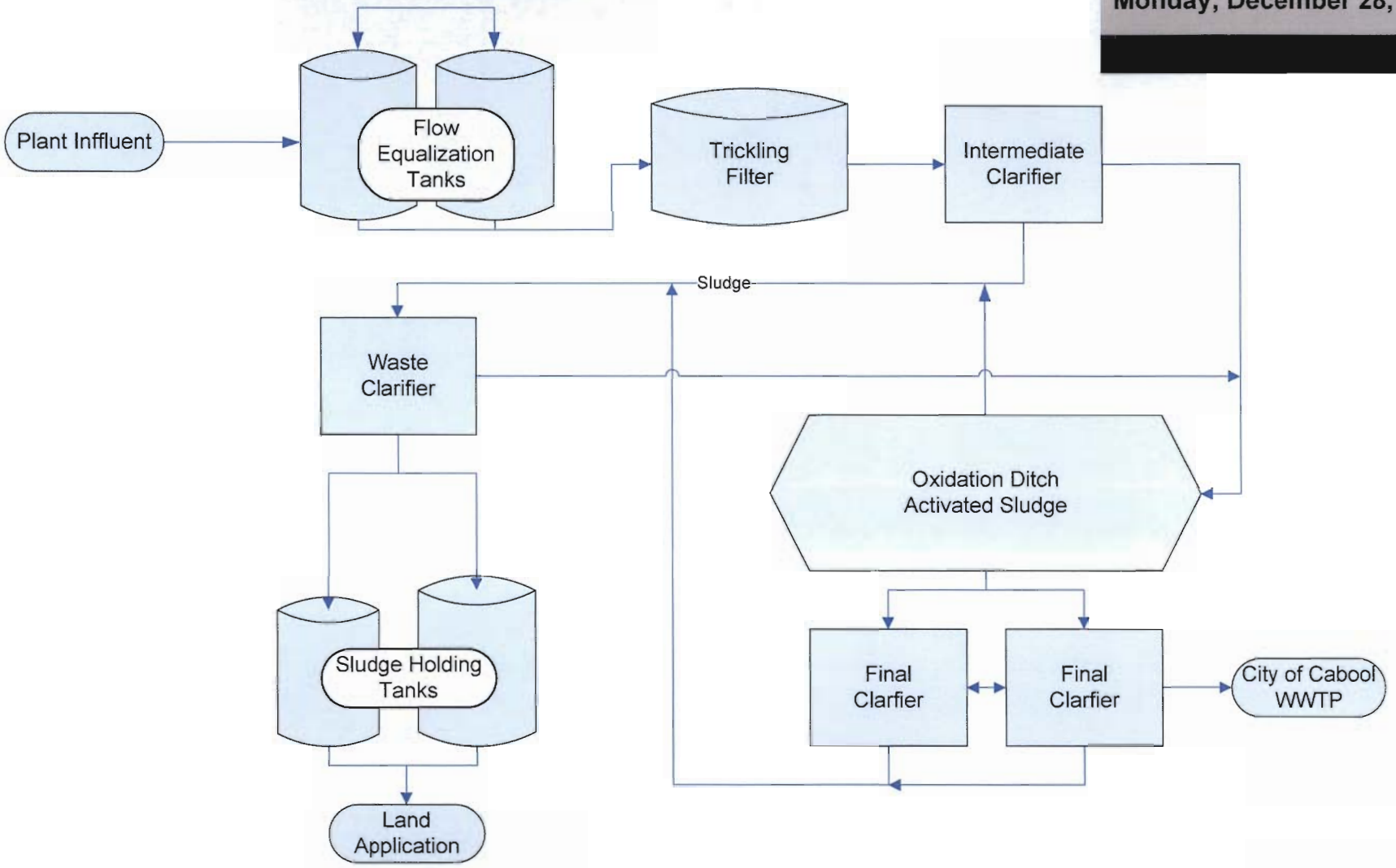
Thursday December 17, 2015



Water Use Flow Diagram
Form C Part 2.40.A

Dairy Farmers of America, Cabool Facility

Monday, December 28, 2015



Wastewater Treatment Plant Schematic
Form R Part 3.92

Outfall 005 Land Application Areas

ID	Owner	Legal Description & UTM Coordinates					
GWA	Glen Williams	SW 1/4	SW 1/4	Sec. 11	T 28N	R 11W	Texas County
		Easting	578896		Northing	4108101	
BWB	James Woods	NE 1/4	NE 1/4	Sec. 14	T 28N	R 11W	Texas County
		Easting	579111		Northing	4107539	
BWC	James Woods	NE 1/4	NE 1/4	Sec. 23	T 28N	R 11W	Texas County
		Easting	578647		Northing	4105752	
JBA	John Beller	SW 1/4	SW 1/4	Sec. 26	T 28N	R 11W	Texas County
		Easting	578316		Northing	4103584	
JBB	John Beller	SW 1/4	SW 1/4	Sec. 25	T 28N	R 11W	Texas County
		Easting	579792		Northing	4103366	
JWA	Joe Whetstine	NW 1/4	NW 1/4	Sec. 20	T 29N	R 10W	Texas County
		Easting	582912		Northing	4115875	
JWB	Joe Whetstine	SE 1/4	SE 1/4	Sec. 17	T 29N	R 10W	Texas County
		Easting	584147		Northing	4116490	
JWD	Joe Whetstine	SW 1/4	SW 1/4	Sec. 17	T 29N	R 10W	Texas County
			583139		Northing	4116630	
JWE	Joe Whetstine	SW 1/4	SW 1/4	Sec. 9	T 29N	R 10W	Texas County
		Easting	584163		Northing	4118189	
LTA	Lloyd Taff	NE 1/4	NW 1/4	Sec.32	T 29N	R 10W	Texas County
		Easting	582732		Northing	4112201	

APPENDIX B
Soil Test Data
Soil Test Laboratory Results

Facility Name	DFA Cabool		Owner Current Address
Permit Number	**MO-0002828**		701 Metrecal Street
County	Texas		Cabool, MO 65689
Facility Type	Industrial Pretreatment Activated Sludge		ANALYSES PERFORMED BY (Lab)
SAMPLES COLLECTED BY Mike Dalton	DATE See Attached	PHONE NUMBER 417-962-0305	University Extension University of Missouri - Columbia
SIGNATURE AND TITLE OF INDIVIDUAL PREPARING REPORT Pretreatment Plant Manager	DATE	PHONE NUMBER 417-962-0305	PHONE NUMBER (Lab) 417-862-9284
SIGNATURE OR OWNER OR DESIGNEE APPROVING REPORT	DATE	PHONE NUMBER 417-962-1820	This report covers the period of: 10/1/14 to 9/30/15

2015 Soil Test Data

Spring

Outfall #	Field	pH	Phosp as P lbs/A	Potassium lbs/A	Calcium lbs/A	Magnesium lbs/A	% Organic Matter	Neutraliz able acidity	Cation Exch Capacity, meq/100g	Crop	Crop Yield
005	JBA	6.4	15	272	2,930	819	2.2	0.5	11.6	grass pasture	150 CD/A
005	JBB	6.6	49	197	3,160	487	3.7	0	10.2	grass pasture	150 CD/A
005	BWB	5.4	25	107	2,060	325	3.1	2.5	9.1	grass pasture	150 CD/A
005	BWC	6.6	7	93	2,830	609	2.8	0	9.7	grass pasture	150 CD/A

Fall

Outfall #	Fall	pH	Phosp as P lbs/A	Potassium lbs/A	Calcium lbs/A	Magnesium lbs/A	% Organic Matter	Neutraliz able acidity	Cation Exch Capacity, meq/100g	Crop	Crop Yield
005	JBA	7.2	52	166	9,700	335	4.6	0	25.9	grass pastue	150 CD/A
005	JBB	6.4	31	610	3,710	620	3.9	0	13.6	grass pastue	150 CD/A
005	BWB	7.0	112	276	4,100	336	3.9	0	12.0	grass pastue	150 CD/A
005	BWC	7.1	8	164	3,230	907	3.5	0	12.1	grass pastue	150 CD/A

University Extension
University of Missouri-Columbia

Soil Test Report

Soil Testing Laboratory
23 Mumford Hall, MU
Columbia, MO 65211
Phone: (573) 882-0623

or

Soil Testing Laboratory
P.O. Box 160
Portageville, MO 63873
Phone: (573)379-5431

http://www.soiltest.psu.missouri.edu/

Serial no. S44064-1	Lab no. D1504299
County Barry	Region 6
Submitted 6/3/2015	Processed 6/4/2015

Soil sample submitted by: Firm Number: Outlet:

FIELD INFORMATION		
Field ID JBA	Sample no 1	
Acres 27	Last Limed unknown	Irrigated No
Last crop 19 COOL SEASON GR PAST		FSA Copy N

This report is for:

ECOVATION CO.
49 NORTH EISENHOWER
MONETT MO 65708

SOIL TEST INFORMATION				RATING					
				Very Low	Low	Medium	High	Very High	Excess
pH$_s$	(salt pH)	6.4		**********					
Phosphorus	(P)	15	lbs/A	**********					
Potassium	(K)	272	lbs/A	**********					
Calcium	(Ca)	2930	lbs/A	**********					
Magnesium	(Mg)	819	lbs/A	**********					
Sulfur	(SO_4-S)		ppm						
Zinc	(Zn)		ppm						
Manganese	(Mn)		ppm						
Iron	(Fe)		ppm						
Copper	(Cu)		ppm						

Organic matter 2.2 %	Neutralizable acidity 0.5 meq/100g	Cation Exch. Capacity 11.6 meq/100g			
PH in water	Electrical Conductivity Mmho/cm	Sodium (Na) 14 lbs/A			
Nitrate (NO_3-N) Topsoil 8.0 ppm	Subsoil ppm	Sampling Depth Top 6 Inches	Subsoil Inches		

NUTRIENT REQUIREMENTS

Cropping options	Yield goal	Pounds per acre N	P_2O_5	K_2O	Zn	S
19 COOL SEASON GR PAST	150 CD/A	90	40	20		

LIMESTONE SUGGESTIONS

Effective Neutralizing Material (ENM)	0
Effective magnesium (EMg)	0

Comments

---For cool season grass pasture and bluegrass pasture split nitrogen applications between late Spring after first grazing and mid August, applying 60% before the season of greatest need.

---Some herbicide labels list restrictions based on soil pH in water. This sample has an estimated pH in water of 6.9 . Use this estimated pH in water as a guide. If you wish to have soil pH in water analyzed, contact your dealer or Extension specialist listed below.

---Ammonium is 0.60 ppm.

Regional Agronomy Specialist Tim Schnakenberg Phone 417-357-6812

Tim Schnakenberg
Signature

White-Farmer, Yellow-FSA, Blue-Firm, Pink-Extension MP 189 Revised 1/96 Portageville

University Extension
University of Missouri-Columbia

Soil Test Report

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23 Mumford Hall, MU
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or

Soil Testing Laboratory
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Portageville, MO 63873
Phone: (573)379-5431

http://www.soiltest.psu.missouri.edu/

Serial no. S44064-2	Lab no. D1504300
County Barry	Region 6
Submitted 6/3/2015	Processed 6/4/2015

Soil sample submitted by: Firm Number: Outlet:

FIELD INFORMATION		
Field ID JBB	Sample no 2	
Acres 160	Last Limed unknown	Irrigated No
Last crop 19 COOL SEASON GR PAST		FSA Copy N

This report is for:
ECOVATION CO.
49 NORTH EISENHOWER
MONETT MO 65708

SOIL TEST INFORMATION			RATING					
			Very Low	Low	Medium	High	Very High	Excess
pH_s (salt pH)	6.6		**********					
Phosphorus (P)	49	lbs/A		**********				
Potassium (K)	197	lbs/A			**********			
Calcium (Ca)	3160	lbs/A				**********		
Magnesium (Mg)	487	lbs/A				**********		
Sulfur (SO_4-S)		ppm						
Zinc (Zn)		ppm						
Manganese (Mn)		ppm						
Iron (Fe)		ppm						
Copper (Cu)		ppm						

Organic matter	3.7	%	Neutralizable acidity	0.0	meq/100g	Cation Exch. Capacity	10.2 meq/100g
PH in water			Electrical Conductivity		Mmho/cm	Sodium (Na)	20 lbs/A
Nitrate (NO_3-N) Topsoil	8.3 ppm		Subsoil	ppm	Sampling Depth	Top 6 Inches	Subsoil Inches

NUTRIENT REQUIREMENTS

Cropping options	Yield goal	Pounds per acre N	P_2O_5	K_2O	Zn	S
19 COOL SEASON GR PAST	150 CD/A	90	20	30		

LIMESTONE SUGGESTIONS

Effective Neutralizing Material (ENM)	0
Effective magnesium (EMg)	0

Comments

---For cool season grass pasture and bluegrass pasture split nitrogen applications between late Spring after first grazing and mid August, applying 60% before the season of greatest need.

---Some herbicide labels list restrictions based on soil pH in water. This sample has an estimated pH in water of 7.1 . Use this estimated pH in water as a guide. If you wish to have soil pH in water analyzed, contact your dealer or Extension specialist listed below.

---Ammonium is 0.70 ppm.

Regional Agronomy Specialist Tim Schnakenberg Phone 417-357-6812

Tim Schnakenberg
Signature

White-Farmer, Yellow-FSA, Blue-Firm, Pink-Extension MP 189 Revised 1/96
University of Missouri, Lincoln University, U.S. Department of Agriculture & Local University Extension Councils Cooperating
Equal opportunity institutions

Portageville

University Extension
University of Missouri-Columbia

Soil Test Report

Soil Testing Laboratory
23 Mumford Hall, MU
Columbia, MO 65211
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or

Soil Testing Laboratory
P.O. Box 160
Portageville, MO 63873
Phone: (573)379-5431

http://www.soiltest.psu.missouri.edu/

Serial no. S44064-3	**Lab no. D1504301**
County Barry	Region 6
Submitted 6/3/2015	Processed 6/4/2015

Soil sample submitted by: Firm Number: Outlet:

FIELD INFORMATION		
Field ID BWB	Sample no 3	
Acres 160	Last Limed unknown	Irrigated No
Last crop 19 COOL SEASON GR PAST		FSA Copy N

This report is for:
ECOVATION CO.
49 NORTH EISENHOWER
MONETT MO 65708

SOIL TEST INFORMATION			RATING					
			Very Low	Low	Medium	High	Very High	Excess
pH_s (salt pH)	5.4		**********					
Phosphorus (P)	25	lbs/A	**********	**********				
Potassium (K)	107	lbs/A	**********	**********				
Calcium (Ca)	2060	lbs/A	**********	**********	**********	**********	**********	**********
Magnesium (Mg)	325	lbs/A	**********	**********	**********			
Sulfur (SO_4-S)		ppm						
Zinc (Zn)		ppm						
Manganese (Mn)		ppm						
Iron (Fe)		ppm						
Copper (Cu)		ppm						

Organic matter	3.1 %	Neutralizable acidity	2.5 meq/100g	Cation Exch. Capacity	9.1 meq/100g
PH in water		Electrical Conductivity	Mmho/cm	Sodium (Na)	13 lbs/A
Nitrate (NO_3-N) Topsoil	8.4 ppm	Subsoil ppm	Sampling Depth	Top 6 Inches	Subsoil Inches

NUTRIENT REQUIREMENTS

Cropping options	Yield goal	Pounds per acre N	P_2O_5	K_2O	Zn	S
19 COOL SEASON GR PAST	150 CD/A	90	25	65		

LIMESTONE SUGGESTIONS

Effective Neutralizing Material (ENM)	455
Effective magnesium (EMg)	0

Comments

---For cool season grass pasture and bluegrass pasture split nitrogen applications between late Spring after first grazing and mid August, applying 60% before the season of greatest need.

---Some herbicide labels list restrictions based on soil pH in water. This sample has an estimated pH in water of 5.9 . Use this estimated pH in water as a guide. If you wish to have soil pH in water analyzed, contact your dealer or Extension specialist listed below.

---To determine limestone needed in tons/acre, divide your ENM requirement by the guarantee of your limestone dealer.

---Ammonium is 1.10 ppm.

Regional Agronomy Specialist Tim Schnakenberg Phone 417-357-6812

Tim Schnakenberg
Signature

University Extension
University of Missouri-Columbia

Soil Test Report

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23 Mumford Hall, MU
Columbia, MO 65211
Phone: (573) 882-0623

or

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P.O. Box 160
Portageville, MO 63873
Phone: (573)379-5431

http://www.soiltest.psu.missouri.edu/

Serial no. S44064-4	**Lab no. D1504302**
County Barry	Region 6
Submitted 6/3/2015	Processed 6/4/2015

Soil sample submitted by: Firm Number: Outlet:

FIELD INFORMATION		
Field ID BWC	Sample no 4	
Acres 160	Last Limed unknown	Irrigated No
Last crop 19 COOL SEASON GR PAST		FSA Copy N

This report is for:
ECOVATION CO.
49 NORTH EISENHOWER
MONETT MO 65708

SOIL TEST INFORMATION			RATING					
			Very Low	Low	Medium	High	Very High	Excess
pH_s	(salt pH)	6.6	**********					
Phosphorus	(P)	7 lbs/A	******					
Potassium	(K)	93 lbs/A	**********					
Calcium	(Ca)	2830 lbs/A	**********					
Magnesium	(Mg)	609 lbs/A	**********					
Sulfur	(SO_4-S)	ppm						
Zinc	(Zn)	ppm						
Manganese	(Mn)	ppm						
Iron	(Fe)	ppm						
Copper	(Cu)	ppm						

Organic matter 2.8 %	Neutralizable acidity 0.0 meq/100g	Cation Exch. Capacity 9.7 meq/100g			
PH in water	Electrical Conductivity Mmho/cm	Sodium (Na) 10 lbs/A			
Nitrate (NO_3-N) Topsoil 8.5 ppm	Subsoil ppm	Sampling Depth	Top 6 Inches	Subsoil Inches	

NUTRIENT REQUIREMENTS

Cropping options	Yield goal	Pounds per acre N	P_2O_5	K_2O	Zn	S
19 COOL SEASON GR PAST	150 CD/A	90	60	70		

LIMESTONE SUGGESTIONS

Effective Neutralizing Material (ENM)	0
Effective magnesium (EMg)	0

Comments

---For cool season grass pasture and bluegrass pasture split nitrogen applications between late Spring after first grazing and mid August, applying 60% before the season of greatest need.

---Some herbicide labels list restrictions based on soil pH in water. This sample has an estimated pH in water of 7.1 . Use this estimated pH in water as a guide. If you wish to have soil pH in water analyzed, contact your dealer or Extension specialist listed below.

---Ammonium is 0.50 ppm.

Regional Agronomy Specialist Tim Schnakenberg Phone 417-357-6812

Tim Schnakenberg
Signature

University Extension
University of Missouri-Columbia

Soil Test Report

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23 Mumford Hall, MU
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Phone: (573) 882-0623

or

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Portageville, MO 63873
Phone: (573)379-5431

http://www.soiltest.psu.missouri.edu/

Serial no. S44093-1	**Lab no. D1507904**
County Barry	Region 6
Submitted 11/18/2015	Processed 11/18/2015

Soil sample submitted by: Firm Number: Outlet:

FIELD INFORMATION		
Field ID JB A	Sample no 1	
Acres 27	Last Limed unknown	Irrigated No
Last crop 19 COOL SEASON GR PAST		FSA Copy N

This report is for:

EVOCATION
49 N EISENHOWER
MONETT MO 65708

SOIL TEST INFORMATION			RATING					
			Very Low	Low	Medium	High	Very High	Excess
pH_s	(salt pH)	7.2	**********					
Phosphorus	(P)	52 lbs/A	**********					
Potassium	(K)	166 lbs/A	**********					
Calcium	(Ca)	9700 lbs/A	**********					
Magnesium	(Mg)	335 lbs/A	**********					
Sulfur	(SO_4-S)	ppm						
Zinc	(Zn)	ppm						
Manganese	(Mn)	ppm						
Iron	(Fe)	ppm						
Copper	(Cu)	ppm						

Organic matter 4.6 %	Neutralizable acidity 0.0 meq/100g	Cation Exch. Capacity 25.9 meq/100g			
PH in water	Electrical Conductivity Mmho/cm	Sodium (Na) 20 lbs/A			
Nitrate (NO_3-N) Topsoil 58.1 ppm	Subsoil ppm	Sampling Depth Top 6 Inches	Subsoil Inches		

NUTRIENT REQUIREMENTS

Cropping options	Yield goal	Pounds per acre N	P_2O_5	K_2O	Zn	S
19 COOL SEASON GR PAST	150 CD/A	90	20	65		

LIMESTONE SUGGESTIONS

Effective Neutralizing Material (ENM)	0
Effective magnesium (EMg)	***

Comments

---For cool season grass pasture and bluegrass pasture split nitrogen applications between late Spring after first grazing and mid August, applying 60% before the season of greatest need.

---Some herbicide labels list restrictions based on soil pH in water. This sample has an estimated pH in water of 7.7 . Use this estimated pH in water as a guide. If you wish to have soil pH in water analyzed, contact your dealer or Extension specialist listed below.

***Limestone is not currently recommended. For a future limestone application, suggest using dolomitic limestone if readily available, but yield response to magnesium is not likely.

---Ammonium is 8.40 ppm.

Regional Agronomy Specialist Tim Schnakenberg Phone 417-357-6812

Tim Schnakenberg
Signature

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University of Missouri-Columbia

Soil Test Report

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or

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Portageville, MO 63873
Phone: (573)379-5431

http://www.soiltest.psu.missouri.edu/

Serial no. S44093-2	**Lab no. D1507905**
County Barry	Region 6
Submitted 11/18/2015	Processed 11/18/2015

Soil sample submitted by: Firm Number: Outlet:

FIELD INFORMATION		
Field ID JB B	Sample no 2	
Acres 160	Last Limed unknown	Irrigated No
Last crop 19 COOL SEASON GR PAST		FSA Copy N

This report is for:

EVOCATION
49 N EISENHOWER
MONETT MO 65708

SOIL TEST INFORMATION			RATING					
			Very Low	Low	Medium	High	Very High	Excess
pH_s	(salt pH)	6.4	**********					
Phosphorus	(P)	31 lbs/A	**********					
Potassium	(K)	610 lbs/A	**********					
Calcium	(Ca)	3710 lbs/A	**********					
Magnesium	(Mg)	620 lbs/A	**********					
Sulfur	(SO_4-S)	ppm						
Zinc	(Zn)	ppm						
Manganese	(Mn)	ppm						
Iron	(Fe)	ppm						
Copper	(Cu)	ppm						

Organic matter 3.9 %	Neutralizable acidity 1.0 meq/100g	Cation Exch. Capacity 13.6 meq/100g			
PH in water	Electrical Conductivity Mmho/cm	Sodium (Na) 1 lbs/A			
Nitrate (NO_3-N) Topsoil 15.9 ppm	Subsoil ppm	Sampling Depth	Top 6 Inches	Subsoil Inches	

NUTRIENT REQUIREMENTS

Cropping options	Yield goal	Pounds per acre N	P_2O_5	K_2O	Zn	S
19 COOL SEASON GR PAST	150 CD/A	90	20	0		

LIMESTONE SUGGESTIONS

Effective Neutralizing Material (ENM)	0
Effective magnesium (EMg)	0

Comments

---For cool season grass pasture and bluegrass pasture split nitrogen applications between late Spring after first grazing and mid August, applying 60% before the season of greatest need.

---Some herbicide labels list restrictions based on soil pH in water. This sample has an estimated pH in water of 6.9 . Use this estimated pH in water as a guide. If you wish to have soil pH in water analyzed, contact your dealer or Extension specialist listed below.

---If no P2O5 or no K2O is recommended retest annually to determine when maintenance fertilizer should be applied.

---Ammonium is 3.00 ppm.

Regional Agronomy Specialist Tim Schnakenberg Phone 417-357-6812

Tim Schnakenberg
Signature

University Extension
University of Missouri-Columbia

Soil Test Report

Soil Testing Laboratory
23 Mumford Hall, MU
Columbia, MO 65211
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or

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Portageville, MO 63873
Phone: (573)379-5431

http://www.soiltest.psu.missouri.edu/

Serial no. S44093-3	**Lab no. D1507906**
County Barry	Region 6
Submitted 11/18/2015	Processed 11/18/2015

Soil sample submitted by: Firm Number: Outlet:

FIELD INFORMATION		
Field ID BWB	Sample no 3	
Acres 160	Last Limed unknown	Irrigated No
Last crop 19 COOL SEASON GR PAST		FSA Copy N

This report is for:

EVOCATION
49 N EISENHOWER
MONETT MO 65708

SOIL TEST INFORMATION			RATING					
			Very Low	Low	Medium	High	Very High	Excess
pHs	(salt pH)	7.0	**********					
Phosphorus	(P)	112 lbs/A	**********	**********	**********	**********	**********	**********
Potassium	(K)	276 lbs/A	**********	**********	**********	**********		
Calcium	(Ca)	4100 lbs/A	**********	**********	**********	**********		
Magnesium	(Mg)	336 lbs/A	**********	**********	**********			
Sulfur	(SO_4-S)	ppm						
Zinc	(Zn)	ppm						
Manganese	(Mn)	ppm						
Iron	(Fe)	ppm						
Copper	(Cu)	ppm						

Organic matter 3.9 %	Neutralizable acidity 0.0 meq/100g	Cation Exch. Capacity 12.0 meq/100g			
PH in water	Electrical Conductivity Mmho/cm	Sodium (Na) 1 lbs/A			
Nitrate (NO_3-N) Topsoil 11.5 ppm	Subsoil ppm	Sampling Depth	Top 6 Inches	Subsoil Inches	

NUTRIENT REQUIREMENTS

Cropping options	Yield goal	Pounds per acre N	P_2O_5	K_2O	Zn	S
19 COOL SEASON GR PAST	150 CD/A	90	0	20		

LIMESTONE SUGGESTIONS

Effective Neutralizing Material (ENM)	0
Effective magnesium (EMg)	0

Comments

---For cool season grass pasture and bluegrass pasture split nitrogen applications between late Spring after first grazing and mid August, applying 60% before the season of greatest need.

---Some herbicide labels list restrictions based on soil pH in water. This sample has an estimated pH in water of 7.5 . Use this estimated pH in water as a guide. If you wish to have soil pH in water analyzed, contact your dealer or Extension specialist listed below.

---If no P2O5 or no K2O is recommended retest annually to determine when maintenance fertilizer should be applied.

---Ammonium is 11.70 ppm.

Regional Agronomy Specialist Tim Schnakenberg Phone 417-357-6812

Tim Schnakenberg

Signature

University Extension
University of Missouri-Columbia

Soil Test Report

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Portageville, MO 63873
Phone: (573)379-5431

http://www.soiltest.psu.missouri.edu/

Serial no. S44093-4	**Lab no. D1507907**
County Barry	Region 6
Submitted 11/18/2015	Processed 11/18/2015

Soil sample submitted by: Firm Number: Outlet:

FIELD INFORMATION		
Field ID BWC	Sample no 4	
Acres 160	Last Limed unknown	Irrigated No
Last crop 19 COOL SEASON GR PAST		FSA Copy N

This report is for:
EVOCATION
49 N EISENHOWER
MONETT MO 65708

SOIL TEST INFORMATION			RATING					
			Very Low	Low	Medium	High	Very High	Excess
pH_s (salt pH)	7.1		**********					
Phosphorus (P)	8	lbs/A	******					
Potassium (K)	164	lbs/A	**********					
Calcium (Ca)	3230	lbs/A	**********					
Magnesium (Mg)	907	lbs/A	**********					
Sulfur (SO_4-S)		ppm						
Zinc (Zn)		ppm						
Manganese (Mn)		ppm						
Iron (Fe)		ppm						
Copper (Cu)		ppm						

Organic matter 3.5 %	Neutralizable acidity 0.0 meq/100g	Cation Exch. Capacity 12.1 meq/100g			
PH in water	Electrical Conductivity Mmho/cm	Sodium (Na) 1 lbs/A			
Nitrate (NO_3-N) Topsoil 5.1 ppm	Subsoil ppm	Sampling Depth Top 6 Inches	Subsoil Inches		

NUTRIENT REQUIREMENTS

Cropping options	Yield goal	Pounds per acre N	P_2O_5	K_2O	Zn	S
19 COOL SEASON GR PAST	150 CD/A	90	55	45		

LIMESTONE SUGGESTIONS

Effective Neutralizing Material (ENM)	0
Effective magnesium (EMg)	0

Comments
---For cool season grass pasture and bluegrass pasture split nitrogen applications between late Spring after first grazing and mid August, applying 60% before the season of greatest need.
---Some herbicide labels list restrictions based on soil pH in water. This sample has an estimated pH in water of 7.6 . Use this estimated pH in water as a guide. If you wish to have soil pH in water analyzed, contact your dealer or Extension specialist listed below.
---Ammonium is 2.60 ppm.

Regional Agronomy Specialist Tim Schnakenberg Phone 417-357-6812

Tim Schnakenberg
Signature

APPENDIX C
Resource Recovery Manual

Resource Recovery Manual
For
Cabool, Missouri
Dairy Farmers of America
Land Application of Biosolids

Revised
January 2016

Index

I. Introduction

The guidelines and procedures set forth in this Resource and Recovery Manual concern the utilization of biosolids produced as a by-product from the pretreatment of dairy processing wastes at the Cabool DFA Facility.

The purpose of this manual is to provide the operators of the Cabool DFA pretreatment Facility guidelines for the land application of biosolids. This manual addresses the methods necessary to ensure safe loading rates to the soil as well as ensuring that no negative impacts are made to the environment.

II. Guidelines for the Land Application of Biosolids

A. Application Rates (PAN & Dry Tons)

To comply with permit regulations and to ease record keeping restrictions, DFA limits the Nutrient Loading Rate of Plant Available Nitrogen (PAN) to less than 40 lbs./acre/year on all fields. Further, DFA limits the Total Dry Ton loading rate to less than 2 dry tons/acre/year. No reporting of crop yields is necessary as long as these limits are maintained. The calculation on PAN loading rates is further discussed in the Nutrient Management Plan found in this section of the 0 & M Manual.

B. Separation Distances and Slope Limitations

Separation distances from property lines, streams, wells and other features are necessary to ensure that biosolids do not enter into any waters of the state. Below is a list of separation distances and the procedure to maintain these distances.

Procedure for Establishing Distances:

- Identify all features to maintain a. distance from
- Measure distance from each feature that will be near the application area
- Make a first pass around the area observing the distances with no discharge from the truck.
- Make a second pass inside the first and keep all subsequent passes working away from the features requiring a distance separation

Distance Limitations:

300 ft when any of the following are down gradient from the application area:

- Permanent Flowing Stream
- Losing Steam
- Lake or Pond
- Water Supply Well

150 ft from the following:

- Dwellings
- Wetlands

50 ft from the following:

- Intermittent (wet weather) Flowing Streams
- Property Boundary

Slope Limitations:

0-6 % Slopes:

No restrictions apply other than those to maintain loading rates found in the Nutrient Management Plan.

7-12 % Slopes:

Application may occur where such slopes exist if conservation practices are in place such as terracing or dikes to prevent soil erosion. Application may only occur on land maintained in grass vegetation.

C. Wet or Frozen Ground Limitations

Biosolids will not be applied during rainfall events, saturated soil conditions or when the ground is frozen. However, if application is deemed necessary due to long periods of inclement weather, the following guidelines will be followed.

- A maximum slope of 6 % and a minimum 300 feet grass buffer between the application site and waters of the state must be maintained.

D. Wet Weather Forecast Limitations

In the event there is a forecast of significant rainfall within 24 hours, no land application is to occur. Should the forecast be changed or if there is reasonable reason to believe the forecast is for other parts of the viewing or listening area, land application may occur (if necessary) following the Wet or Frozen Ground Limitations established above. Operators should refrain from land application if at all possible when rain is forecasted.

E. Number of Suitable Days for Application

The Cabool DFA Facility typically land applies between 90-120 days per calendar year. The number of suitable days per calendar year is believed to be around 250-300 days.

F. Nutrient Management Plan

To comply with DNR guidelines and to ease the burden of record keeping, the DFA plant will follow the Nutrient Management Plan below until it becomes necessary to increase loading rates above the current plan limits. In such case, the guidelines found in the Water Quality Guides published by the University of Missouri and available on DNR's website will be followed and this Plan revised accordingly. Until such time, the following will be maintained:

- PAN will be calculated based on lab tests conducted by an outside lab and a loading rate not to exceed 40 lbs/acre/year will be maintained on each land application site
- The total dry tons of biosolids are to be applied at a rate not to exceed 2 dry tons/acre/year on each land application site
- Land application will not occur on any land found to have more than 800 lbs available phosphorus/acre. (See WQ 426)

PAN Calculations:

Water Quality Guide 426 gives the following formula for converting Nitrogen forms to PAN mg/kg dry wt.

(Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor)

Use the volatilization factor of 0.7 for Cabool's application

The volatilization factors are 0.7 for surface application and 1.0 for subsurface injection.

To convert PAN mg/kg dry wt. to pounds per dry ton use the following formula:

PAN mg/kg dry wt x 0.002 = lbs PAN per dry ton

To calculate the lbs of PAN per acre use the following formula:

Dry tons applied x pounds PAN/dry ton = lbs of PAN per acre

III. Land Application Management and Record Keeping

A. Site Maps

Site maps for each land application site can be found in Appendix. A. The site maps show the topography and locations of features requiring separation distances.

B. Sample Collection, Preservation and Testing

Biosolids Sampling:

- Biosolids samples will be collected at the truck when loading. A series of at least 7 samples will be collected and composted for testing. Samples collected for testing off-site will be transferred into prepared sample bottles with the proper preservative provided by the contract lab. Testing conducted at the Cabool plant will occur immediately after the last sample is collected and no preservation will be needed.
- Samples will be mixed thoroughly before being transferred to another container.
- Testing on-site will include pH and Total Solids on the composite sample for every day land application takes place.
- All other testing will be conducted by an outside lab. (Currently CASI, Springfield, MO)

Soil Sampling:

- Samples are collected annually and delivered to the Greene County University of Missouri Extension Office for Testing.
- Follow soil sampling procedures found in the University of Missouri guide located in Appendix B.
- Soil sampling is to occur between the months of March and September.

C. Spill Reporting Procedure

In the event a spill of biosolids occurs, notify the Cabool Pretreatment Plant Manager immediately. Take any precautions necessary to keep the biosolids from entering any waters of the state. The Southeast Regional Office of the Department of Natural Resources will be notified as soon as possible by phone and a follow up letter sent within 24 hours of the spill. Spills can be cleaned-up by vacuum truck and land applied on a permitted land application site covered within this plan.

The phone number to report spills to is:

573-840-9750

The address to mail a report to is:

2155 N. Westwood Blvd., Poplar Bluff, MO 63901

D. Operator Training

All plant operators will be trained in the operation of land application equipment before being released to perform land application of biosolids. Furthermore, operators will be trained on the content of this program with an emphasis placed on gaining an understanding of the proper procedures and restrictions related to the actual land application of biosolids.

E. Land Application Equipment

Land application equipment at the Cabool DFA Facility consists of a 3,500 gal tank truck. Plant personnel and local vendors maintain the truck.

F. Record Keeping

The operator performing the land application of biosolids is required to keep a log of the number of loads hauled. At the end of the day, the total is to be entered into the daily log sheet along with any other pertinent information required on the log sheet.

A record of land application totals as well as a record of PAN/acre and total solids dry ton/acre is kept on the plant computer in an Excel or equivalent file. These files will be updated on a regular basis to ensure the proper loading rates are observed.

A copy of the daily log and any other record keeping forms can be found in Appendix C.

Site ID – GWA

GWA	Glen Williams	SW 1/4	SW 1/4	Sec. 11	T 28N	R 11W	Texas County

Map Symbol	Map Unit Name	Farmland Classification
70026	Tonti silt loam, 1 to 3 percent slopes	All areas are prime farmland
73000	Pomme silt loam, 3 to 8 percent slopes	All areas are prime farmland
73019	Poynor very gravelly silt loam, 1 to 8 percent slopes	Not prime farmland
73058	Gunlock silt loam, 1 to 8 percent slopes	All areas are prime farmland
73220	Poynor extremely gravelly silt loam, 8 to 15 percent slopes	All areas are prime farmland
75420	Secesh-Tilk complex, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland

Site ID – BWB

BWB	James Woods	NE 1/4	NE 1/4	Sec. 14	T 28N	R 11W	Texas County

Map Symbol	Map Unit Name	Farmland Classification
73000	Pomme silt loam, 3 to 8 percent slopes	All areas are prime farmland
73019	Poynor very gravelly silt loam, 1 to 8 percent slopes	Not prime farmland
73024	Mano-Ocie complex, 8 to 15 percent slopes, stony	Not prime farmland
73058	Gunlock silt loam, 1 to 8 percent slopes	All areas are prime farmland
73076	Mano-Ocie complex, 15 to 35 percent slopes, stony	Farmland of statewide importance
75420	Secesh-Tilk complex, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland
76047	Secesh-Tilk complex, 1 to 3 percent slopes, occasionally flooded	All areas are prime farmland

BWC	James Woods	NE 1/4	NE 1/4	Sec. 23	T 28N	R 11W	Texas County

Map unit symbol	Map unit name	Rating
73000	Pomme silt loam, 3 to 8 percent slopes	All areas are prime farmland
73019	Poynor very gravelly silt loam, 1 to 8 percent slopes	Not prime farmland
73021	Poynor extremely gravelly silt loam, 15 to 35 percent slopes, stony	Not prime farmland
73023	Mano-Ocie complex, 1 to 8 percent slopes	Not prime farmland
73024	Mano-Ocie complex, 8 to 15 percent slopes, stony	Not prime farmland
73057	Jerktail silt loam, 1 to 3 percent slopes	Not prime farmland
73076	Mano-Ocie complex, 15 to 35 percent slopes, stony	Farmland of statewide importance
73197	Viburnum silt loam, 3 to 8 percent slopes	Farmland of statewide importance
73220	Poynor extremely gravelly silt loam, 8 to 15 percent slopes	All areas are prime farmland
75392	Stultz very cobbly loam, 1 to 3 percent slopes, frequently flooded	Not prime farmland
76047	Secesh-Tilk complex, 1 to 3 percent slopes, occasionally flooded	All areas are prime farmland

JBA	John Beller	SW 1/4	SW 1/4	Sec. 26	T 28N	R 11W	Texas County

Map unit symbol	Map unit name	Rating
73000	Pomme silt loam, 3 to 8 percent slopes	All areas are prime farmland
73023	Mano-Ocie complex, 1 to 8 percent slopes	Not prime farmland
73024	Mano-Ocie complex, 8 to 15 percent slopes, stony	Not prime farmland
73076	Mano-Ocie complex, 15 to 35 percent slopes, stony	Farmland of statewide importance
73220	Poynor extremely gravelly silt loam, 8 to 15 percent slopes	All areas are prime farmland
73228	Gatewood-Moko complex, 3 to 15 percent slopes, very rocky, very flaggy	All areas are prime farmland
76047	Secesh-Tilk complex, 1 to 3 percent slopes, occasionally flooded	All areas are prime farmland

JBB	John Beller	SW 1/4	SW 1/4	Sec. 25	T 28N	R 11W	Texas County

Map unit	Map unit name	Rating
70022	Tonti silt loam, 3 to 8 percent slopes	Farmland of statewide importance
73019	Poynor very gravelly silt loam, 1 to 8 percent slopes	Not prime farmland
73021	Poynor extremely gravelly silt loam, 15 to 35 percent slopes, stony	Not prime farmland
73197	Viburnum silt loam, 3 to 8 percent slopes	Farmland of statewide importance
73220	Poynor extremely gravelly silt loam, 8 to 15 percent slopes	All areas are prime farmland

JWA	Joe Whetstine	NW 1/4	NW 1/4	Sec. 20	T 29N	R 10W	Texas County

Map unit symbol	Map unit name	Rating
73019	Poynor very gravelly silt loam, 1 to 8 percent slopes	Not prime farmland
73024	Mano-Ocie complex, 8 to 15 percent slopes, stony	Not prime farmland
73058	Gunlock silt loam, 1 to 8 percent slopes	All areas are prime farmland
73076	Mano-Ocie complex, 15 to 35 percent slopes, stony	Farmland of statewide importance
73198	Gressy-Viraton complex, 3 to 8 percent slopes	All areas are prime farmland
74626	Tanglenook silt loam, 1 to 3 percent slopes, rarely flooded	Prime farmland if drained
75392	Stultz very cobbly loam, 1 to 3 percent slopes, frequently flooded	Not prime farmland

JWB	Joe Whetstine	SE 1/4	SE 1/4	Sec. 17	T 29N	R 10W	Texas County

Map unit symbol	Map unit name	Rating
70022	Tonti silt loam, 3 to 8 percent slopes	Farmland of statewide importance
73000	Pomme silt loam, 3 to 8 percent slopes	All areas are prime farmland
73017	Bendavis-Poynor complex, 15 to 50 percent slopes, rocky, very stony	Not prime farmland
73019	Poynor very gravelly silt loam, 1 to 8 percent slopes	Not prime farmland
73023	Mano-Ocie complex, 1 to 8 percent slopes	Not prime farmland
73024	Mano-Ocie complex, 8 to 15 percent slopes, stony	Not prime farmland
73058	Gunlock silt loam, 1 to 8 percent slopes	All areas are prime farmland
73073	Scholten-Poynor complex, 8 to 15 percent slopes	Not prime farmland
73220	Poynor extremely gravelly silt loam, 8 to 15 percent slopes	All areas are prime farmland
73228	Gatewood-Moko complex, 3 to 15 percent slopes, very rocky, very flaggy	All areas are prime farmland
75388	Kaintuck-Relfe complex, 0 to 2 percent slopes, frequently flooded	Not prime farmland
75392	Stultz very cobbly loam, 1 to 3 percent slopes, frequently flooded	Not prime farmland

JWD	Joe Whetstine	SW 1/4	SW 1/4	Sec. 17	T 29N	R 10W	Texas County

Map unit symbol	Map unit name	Rating
70022	Tonti silt loam, 3 to 8 percent slopes	Farmland of statewide importance
73023	Mano-Ocie complex, 1 to 8 percent slopes	Not prime farmland
73024	Mano-Ocie complex, 8 to 15 percent slopes, stony	Not prime farmland
73057	Jerktail silt loam, 1 to 3 percent slopes	Not prime farmland
73058	Gunlock silt loam, 1 to 8 percent slopes	All areas are prime farmland
73076	Mano-Ocie complex, 15 to 35 percent slopes, stony	Farmland of statewide importance
73077	Eudy silt loam, 1 to 8 percent slopes	Prime farmland if drained
73197	Viburnum silt loam, 3 to 8 percent slopes	Farmland of statewide importance
73198	Gressy-Viraton complex, 3 to 8 percent slopes	All areas are prime farmland
73228	Gatewood-Moko complex, 3 to 15 percent slopes, very rocky, very flaggy	All areas are prime farmland
74626	Tanglenook silt loam, 1 to 3 percent slopes, rarely flooded	Prime farmland if drained
75392	Stultz very cobbly loam, 1 to 3 percent slopes, frequently flooded	Not prime farmland

JWE	Joe Whetstine	SW 1/4	SW 1/4	Sec. 9	T 29N	R 10W	Texas County

Map unit symbol	Map unit name	Rating
70022	Tonti silt loam, 3 to 8 percent slopes	Farmland of statewide importance
73019	Poynor very gravelly silt loam, 1 to 8 percent slopes	Not prime farmland
73021	Poynor extremely gravelly silt loam, 15 to 35 percent slopes, stony	Not prime farmland
73023	Mano-Ocie complex, 1 to 8 percent slopes	Not prime farmland
73024	Mano-Ocie complex, 8 to 15 percent slopes, stony	Not prime farmland
73057	Jerktail silt loam, 1 to 3 percent slopes	Not prime farmland
73073	Scholten-Poynor complex, 8 to 15 percent slopes	Not prime farmland
73076	Mano-Ocie complex, 15 to 35 percent slopes, stony	Farmland of statewide importance
73198	Gressy-Viraton complex, 3 to 8 percent slopes	All areas are prime farmland
73220	Poynor extremely gravelly silt loam, 8 to 15 percent slopes	All areas are prime farmland
73228	Gatewood-Moko complex, 3 to 15 percent slopes, very rocky, very flaggy	All areas are prime farmland
74627	Hartville silt loam, 1 to 3 percent slopes, rarely flooded	Prime farmland if drained
75382	Cedargap gravelly loam, 1 to 3 percent slopes, frequently flooded	Not prime farmland

Site ID – LTA

LTA	Lloyd Taff	NE 1/4	NW 1/4	Sec.32	T 29N	R 10W	Texas County

Map unit symbol	Map unit name	Rating
73000	Pomme silt loam, 3 to 8 percent slopes	All areas are prime farmland
73058	Gunlock silt loam, 1 to 8 percent slopes	All areas are prime farmland
73228	Gatewood-Moko complex, 3 to 15 percent slopes, very rocky, very flaggy	All areas are prime farmland
73229	Gatewood-Moko complex, 15 to 35 percent slopes, very rocky, very flaggy	Farmland of statewide importance
75381	Bearthicket silt loam, 0 to 2 percent slopes, rarely flooded	All areas are prime farmland
75390	Razort silt loam, 0 to 2 percent slopes, rarely flooded	All areas are prime farmland
75392	Stultz very cobbly loam, 1 to 3 percent slopes, frequently flooded	Not prime farmland
75420	Secesh-Tilk complex, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland
76626	Tanglenook silt loam, 0 to 2 percent slopes, rarely flooded	Prime farmland if drained

Soils Information:

ID: GWA

Soil Series Name: Gunlock
Depth to Bedrock (Ft) 5-8
Depth to Water Table (Ft) 2-3
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 0.43
In/hr for 24-60 inch soil depth 0.14

Soil Series Name: Pomme
Depth to Bedrock (Ft) > 5.0
Depth to Water Table (Ft) >6.0
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 1.28
In/hr for 24-60 inch soil depth 1.28

Soil Series Name: Tonti
Depth to Bedrock (Ft) > 5.0
Depth to Water Table (Ft) 2.0
In/hr for 0-12 inch soil depth 0.28
In/hr for 12-24 inch soil depth 1.28
In/hr for 24-60 inch soil depth 0.14

ID: BWB

Soil Series Name: Poynor
Depth to Bedrock (Ft) >6.5
Depth to Water Table (Ft) >6.0
In/hr for 0-12 inch soil depth 2.83
In/hr for 12-24 inch soil depth 1.28
In/hr for 24-60 inch soil depth 1.28

Soil Series Name: Pomme
Depth to Bedrock (Ft) > 5.0
Depth to Water Table (Ft) >6.0
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 1.28
In/hr for 24-60 inch soil depth 1.28

ID: BWC

Soil Series Name: Viburnum
Depth to Bedrock (Ft) > 5.0
Depth to Water Table (Ft) 1.5
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 0.43
In/hr for 24-60 inch soil depth 0.43

Soil Series Name: Poynor
Depth to Bedrock (Ft) >6.5
Depth to Water Table (Ft) >6.0
In/hr for 0-12 inch soil depth 2.83
In/hr for 12-24 inch soil depth 1.28
In/hr for 24-60 inch soil depth 1.28

ID: JBA

Soil Series Name: Mano-Ocie
Depth to Bedrock (Ft) > 5.0
Depth to Water Table (Ft) 2.5
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 0.09
In/hr for 24-60 inch soil depth 0.09

Soil Series Name: Pomme
Depth to Bedrock (Ft) > 5.0
Depth to Water Table (Ft) >6.0
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 1.28
In/hr for 24-60 inch soil depth 1.28

ID: JBB

Soil Series Name: Viburnum
Depth to Bedrock (Ft) > 5.0
Depth to Water Table (Ft) 1.5
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 0.43
In/hr for 24-60 inch soil depth 0.43

Soil Series Name: Poynor
Depth to Bedrock (Ft) > 6.5
Depth to Water Table (Ft) >6.0
In/hr for 0-12 inch soil depth 2.83
In/hr for 12-24 inch soil depth 1.28
In/hr for 24-60 inch soil depth 1.28

Soil Series Name: Tonti
Depth to Bedrock (Ft) >5.0
Depth to Water Table (Ft) 2.0
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 1.28
In/hr for 24-60 inch soil depth 0.14

ID: JWA

Soil Series Name: Tonti
Depth to Bedrock (Ft) > 5.0
Depth to Water Table (Ft) 2.0
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 1.28
In/hr for 24-60 inch soil depth 0.14

Soil Series Name: Mano-Ocie
Depth to Bedrock (Ft) >5.0
Depth to Water Table (Ft) 2.5
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 0.09
In/hr for 24-60 inch soil depth 0.09

Soil Series Name: Poynor
Depth to Bedrock (Ft) >6.5
Depth to Water Table (Ft) >6.0
In/hr for 0-12 inch soil depth 2.83
In/hr for 12-24 inch soil depth 1.28
In/hr for 24-60 inch soil depth 1.28

ID: JWB

Soil Series Name: Poynor
Depth to Bedrock (Ft) >6.5
Depth to Water Table (Ft) >6.0
In/hr for 0-12 inch soil depth 2.83
In/hr for 12-24 inch soil depth 1.28
In/hr for 24-60 inch soil depth 1.28

Soil Series Name: Gatewood
Depth to Bedrock (Ft) 2-3.5
Depth to Water Table (Ft) 2-3
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 0.14
In/hr for 24-60 inch soil depth 0.01

ID: JWD

Soil Series Name: Gunlock
Depth to Bedrock (Ft) 5-8
Depth to Water Table (Ft) 2-3
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 0.43
In/hr for 24-60 inch soil depth 0.14

Soil Series Name: Tamdenook
Depth to Bedrock (Ft) >6.5
Depth to Water Table (Ft) 0-1.5
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 0.43
In/hr for 24-60 inch soil depth 0.14

Soil Series Name: Viburnum
Depth to Bedrock (Ft) >5.0
Depth to Water Table (Ft) 1.5
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 0.43
In/hr for 24-60 inch soil depth 0.43

Soil Series Name: Jerktail
Depth to Bedrock (Ft) 5-6.5
Depth to Water Table (Ft) 2.0
In/hr for 0-12 inch soil depth 1.43
In/hr for 12-24 inch soil depth 1.13
In/hr for 24-60 inch soil depth 0.14

ID: JWE

Soil Series Name: Gunlock
Depth to Bedrock (Ft) 5-8
Depth to Water Table (Ft) 2-3
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 0.43
In/hr for 24-60 inch soil depth 0.14

ID: LTA

Soil Series Name: Gunlock
Depth to Bedrock (Ft) 5-8
Depth to Water Table (Ft) 2-3
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 0.43
In/hr for 24-60 inch soil depth 0.14

Soil Series Name: Pomme
Depth to Bedrock (Ft) > 5.0
Depth to Water Table (Ft) >6.0
In/hr for 0-12 inch soil depth 1.28
In/hr for 12-24 inch soil depth 1.28
In/hr for 24-60 inch soil depth 1.28

Appendix C

CABOOL BIOSOLIDS APPLICATION LOG

LAND OWNER: ______________________________ YEAR: _________________

LEASED BY: ________________________________ FIELD ID: ______________

ACRES: _________ Total PAN allowed/year: 40 lbs/acre

DATE	DRIVER	LOADS	GALLONS	DRY TONS	PAN DRY TONS	TOTAL Lbs PAN	Lbs PAN Remaining

DAILY BIOSOLIDS RECORDS

DATE	DRIVER	FIELD ID	LOADS	GALLONS	COMMENTS