

STATE OF MISSOURI  
**DEPARTMENT OF NATURAL RESOURCES**

MISSOURI CLEAN WATER COMMISSION



**MISSOURI STATE OPERATING PERMIT**

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

Permit No. MO-0135801

Owner: Missouri Biosolids, LLC  
Address: 2927 County Road 253, Columbia, Missouri 65202

Continuing Authority: Same as above  
Address: Same as above

Facility Name: Missouri Biosolids North Farms  
Facility Address: County Road 285, 0.75 mile south of Route E, Columbia, Missouri 65202

Legal Description: See Page 2  
UTM Coordinates: See Page 2

Receiving Stream: See Page 2  
First Classified Stream and ID: See Page 2  
USGS Basin & Sub-watershed No.: See Page 2

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

**FACILITY DESCRIPTION**

All Permitted Features – Storage and Land Application Facility – SIC #4952 & #4953 – No Certified Operator Required

Continued on Page 2

This facility is authorized to receive biosolids, sludge, septage, domestic wastes, and industrial wastes. See Special Condition #3.

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

April 1, 2015  
\_\_\_\_\_  
Effective Date

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

March 31, 2020  
\_\_\_\_\_  
Expiration Date

\_\_\_\_\_  
John Madras, Director, Water Protection Program

**FACILITY DESCRIPTION** (continued)

**Receiving Stream Watershed:** A gaining stream setting

**Facility Type:**

No-discharge System – Two-cell sludge storage basin / two sludge drying beds/ sludge is land applied.

**Outfall #001 - Emergency Discharge from Sludge Storage Basin**

Legal Description: NE ¼, SE ¼, NE ¼, Sec. 19, T49N, R10W, Callaway County  
UTM Coordinates: X = 580329; Y = 4318885  
Receiving Stream: Tributary to the Fourmile Branch  
First Classified Stream and ID: Fourmile Branch (C) (3960)  
USGS Basin & Sub-watershed No.: 10300102 – 1502  
Approximately 3.2 miles from First Classified Stream

**Storage Basins (2):**

Freeboard for basin: 1 foot  
Storage volume (minimum to maximum water levels) 584,408 cubic feet

**Days of Storage**

Design for dry-weather flows 365 days

This facility accepts sludge on a space-available basis. The basins have a storage capacity of approximately 4,493,000 gallons.

**Land Application:**

*Watershed 1*

Legal Description: NE ¼ and NW ¼ and N ½, SE ¼ and N ½, SW ¼, Sec 19, T49N, R10W, Callaway County  
And the SW ¼, Sec 18, T49N, R10W, Callaway County  
Receiving Stream: Tributary to Renfro Creek  
First Classified Stream and ID: Renfro Creek (C) (3960)  
USGS Basin & Sub-watershed No.: 10300102 – 1002

*Watershed 2*

Legal Description: E ½, NE ¼ and N ½, SE ¼ and NE ¼, SW ¼, Sec. 19, T49N, R10W, Callaway County  
Receiving Stream: Tributary to tributary to Auxvasse Creek  
First Classified Stream and ID: Tributary to Auxvasse Creek (C) (3960)  
USGS Basin & Sub-watershed No.: 10300102 – 1502

Sludge irrigation volume/year: 4,492,969 gallons, based on 365-day storage plus 1-in-10-year rainfall  
Irrigation areas: 1327 acres total available  
Field slopes: less than three percent (3%)  
Equipment type: Umbilical hose or drag line and sludge injection toolbar for liquid application and a manure spreader and disk for solids application  
Vegetation: Row Crops  
Application rate is based on: Plant Available Nitrogen

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 3 of 11	
					PERMIT NUMBER MO-0135801	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
PERMITTED FEATURES AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Storage Basin</u> Operational Monitoring (Notes 1, 2, & 3)						
Storage Basin Freeboard	feet	*			once/month	measured
Rainfall	inches	*			daily	total
Land Application to Farm Fields (Notes 1 & 2)						
Irrigation Period	hours	*			daily	total
Volume Irrigated	gallons	*			daily	total
Application Area	acres	*			daily	total
Application Rate	inches	*			daily	total
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2016</u> .						
Irrigated Sludge (Note 4)						
Total Kjeldahl Nitrogen as N	mg/L	*			once/quarter **	grab
Ammonia Nitrogen as N	mg/L	*			once/quarter **	grab
Nitrate + Nitrite	mg/L	*			once/quarter **	grab
Total Phosphorus	mg/L	*			once/quarter **	grab
Acetone	mg/L	*			once/quarter **	grab
Methylene Chloride	mg/L	*			once/quarter **	grab
Toluene	mg/L	*			once/quarter **	grab
Methanol	mg/L	*			once/quarter **	grab
Pyridine	µg/L	*			once/quarter **	grab
Amoxicillin (Note 5)	mg/L	*			once/quarter **	grab
Ampicillin (Note 5)	mg/L	*			once/quarter **	grab
Cefadroxil (Note 5)	mg/L	*			once/quarter **	grab
Cefdinir (Note 5)	mg/L	*			once/quarter **	grab
Cefprozil (Note 5)	mg/L	*			once/quarter **	grab
Cephalexin (Note 5)	mg/L	*			once/quarter **	grab
Decloxacillin (Note 5)	mg/L	*			once/quarter **	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>JULY 28, 2015</u> .						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)				PAGE NUMBER 4 of 11		
				PERMIT NUMBER MO-0135801		
PERMITTED FEATURES AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Soil Monitoring (Note 6)						
Ammonia as N	mg/kg	*			once/year	composite
Nitrate + Nitrite	mg/kg	*			once/year	composite
Chlorides	mg/kg	*			once/year	composite
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2016</u> .						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)				PERMIT NUMBER MO-0135801		
				PERMIT NUMBER MO-0135801		
PERMITTED FEATURES AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Soil Monitoring (Note 6)						
Available Phosphorus as P (Bray 1-P method)	mg/kg	*			once/3 years	composite
Total Sodium	mg/kg	*			once/3 years	composite
Exchangeable Sodium Percentage	%	*			once/3 years	composite
pH – Units	SU	*			once/3 years	composite
MONITORING REPORTS SHALL BE SUBMITTED <u>ONCE EVERY THREE YEARS</u> ; THE FIRST REPORT IS DUE <u>JANUARY 28, 2018</u> .						

- \* Monitoring requirement only.
- \*\* See table below for quarterly sampling

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

Note 1 - **No-discharge facility requirements.** Sludge shall be stored and land applied during suitable conditions so that there is no-discharge from the sludge storage basins, sludge drying pads, or sludge irrigation site(s). An emergency discharge may occur when excess wastewater has accumulated above feasible irrigation rates due to precipitation exceeding the chronic, 1-in-10-year, 365-day rainfall or the catastrophic, 25-year, 24-hour storm event. **In the event of any discharge the department must be notified within 24 hours.** This notification must be made to the appropriate regional office or to the environmental emergency response.

There shall be no-discharge of wastewater and/or sludge during dry weather conditions when soils are suitable for irrigation. If wastewater and/or sludge has been properly land applied on all suitable days during the previous 12 months, emergency discharge is allowed by overflow through the emergency spillway of the storage structure due to storm events exceeding the chronic or catastrophic storm events, but discharge shall cease as soon as land application is feasible. In no event shall discharge be allowed by pumping, siphoning, cutting of berms, irrigation runoff, or any other method, except as authorized herein. Permittee shall make every reasonable effort to cease discharge as soon as soil conditions are suitable for irrigation.

Note 2 – Records shall be maintained and summarized into an **annual operating report**, which shall be submitted by January 28th of each year for the previous calendar year period using report forms approved by the Department. See Special Condition 16.

Note 3 – Storage Basin freeboard shall be reported as lagoon water level in feet below the overflow level. See Special Conditions for Wastewater Land Application System requirements.

Note 4 – Sludge that is irrigated shall be sampled at the irrigation pump or wet well. Report is due quarterly, regardless of whether sludge is land applied during a particular quarter.

Note 5 – Antibiotic testing shall be done according to the requirements of Special Condition 18.

Note 6 – Sample the top 6 to 12 inches of soil. Composite samples shall be collected from each land application site and each soil type in accordance with University of Missouri publication G9215, Soil Sampling Pastures, or G9217, Soil Sampling Hayfields and Row Crops. Testing shall conform to Soil Testing Procedures for North Central Region (North Dakota Agricultural Experiment Bulletin 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.

### C. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Parts I & III standard conditions dated November 1, 2013 and March 1, 2014, and hereby incorporated as though fully set forth herein.

### D. SPECIAL CONDITIONS

1. The term “sludge” used herein means sludge, biosolids, by-products and residuals from domestic and/or industrial waste sources. It does not include licensed fertilizer products.
2. **Emergency Discharge.** An emergency discharge from wastewater storage structures 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 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 in the first six (6) hours of discovery of the discharge and then once per day following the initial sampling period until the discharge ceases. The facility shall submit test results, along with the number of days the storage basin(s) has discharged during the month, to the Northeast Regional Office by the 28<sup>th</sup> day of the month after the discharge ceases. Permittee shall monitor for the following constituents:

D. SPECIAL CONDITIONS (continued)

Constituent	Units	Constituent	Units
Flow	MGD	Sulfate plus Chloride	mg/L
Rainfall	inches	Total Alkalinity	mg/L
Biochemical Oxygen Demand <sub>5</sub>	mg/L	Oil & Grease	mg/L
Total Suspended Solids	mg/L	Acetone	µg/L
Chemical Oxygen Demand	mg/L	Methylene Chloride	µg/L
Total Dissolved Solids	mg/L	Toluene	µg/L
Conductivity (Specific Conductance)	µmhos/cm @ 25°C	Methanol	µg/L
Ammonia as N	mg/L	Pyridine	µg/L
Temperature	°C	2-Butanone	µg/L
pH	S.U.		µg/L

It is a violation of the permit to violate water quality in the stream even during the chronic or catastrophic precipitation events.

3. Approval of Sludge Characteristics.

- a. The permittee is authorized to receive and land apply domestic sludge. Permit Standard Conditions, Part III shall apply to the land application of domestic sludge with no mixture of industrial sludge.
- b. The permittee shall obtain approval to receive and land apply industrial sludge within every Standard Industrial Classification System industry group that the permittee anticipates receiving. In order to obtain approval for land application of an industry group sludge, the permittee shall submit a completed Form R – Permit Application for Land Application of Industrial Wastewater Biosolids and Residuals. The department may request additional information before approval is granted, or require that the permit be modified to ensure that permit limitations and monitoring requirements are protective of water quality.
- c. Once approved, sludge that meets the characteristics listed on the approved Form R for the industry group is authorized for land application. Only those pollutants listed in the approved Form R may be land applied.
- d. Industrial sludge, including any mixtures of domestic and industrial sludges, shall be land applied according to the Special Conditions of this permit.
- e. Approved industry groups shall be listed in the facility Operation and Maintenance (O&M) Manual (See Special Condition 21). The list shall give the following information:
  - (1) the three-digit industry group SIC code,
  - (2) the sludge characteristics and constituent pollutants listed on the approved Form R, and
  - (3) the specific industries the permittee receives within each industry group with contact information.
 A list of specific industries from which the permittee receives industrial sludge is required by Special Condition 16.
- f. If new pollutants are identified or if the sludge characteristics or pollutant levels are found to be significantly higher than the values as reported on the approved Form R, the department shall be notified within 30 days and a revised Form R submitted prior to any further land application.
- g. Hazardous waste regulated under the Missouri Hazardous Waste Law and regulations shall not be land applied under this permit.
- h. The permittee is approved to land apply industrial sludge received from TEVA Pharmaceuticals USA in Mexico, Missouri, Standard Industrial Classification System Industry Group 283: Drugs.
- i. The permittee is approved to land apply industrial sludge received from Unilever in Jefferson City, Missouri and from other sources of Major Group 20.

4. A depth gauge shall be maintained in the storage basins so that the depth can be ascertained at all times. The gauge must be readable from a location on the berm and must indicate minimum and maximum wastewater/sludge levels and the height at which overflow will occur. Each storage basin shall be operated so that the maximum water elevation does not exceed one foot below the overflow point except due to exceedance of the 1-in-10-year or 25-year, 24-hour storm events. Sludge shall be land applied whenever feasible based on soil and weather conditions and permit requirements. The storage basins shall be lowered to the minimum operating level by **November 30** of each year (prior to each winter)

5. All permitted features must be clearly marked in the field. The permitted features and land application fields shall also be marked on the aerial or topographic site map included with the Operation and Maintenance manual. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).

6. 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.

D. SPECIAL CONDITIONS (continued)

- b. General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
  - (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
  - (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
  - (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
  - (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
  - (5) There shall be no significant human health hazard from incidental contact with the water;
  - (6) There shall be no acute toxicity to livestock or wildlife watering;
  - (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
  - (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.
7. 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:
  - b. contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
  - c. controls any pollutant not limited in the permit.
  - d. 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.
  - e. 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.
  - f. 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.
8. The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.
9. The facility must be sufficiently secured to restrict entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.
10. A least one gate must be provided to access the wastewater treatment facility and provide for maintenance and mowing. The gate shall remain locked except when opened by the permittee to perform operational monitoring, sampling, maintenance, mowing, or for inspections by the Department.
11. 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. The O&M Manual shall be reviewed and updated at least every five years.
12. An all-weather access road shall be provided to the treatment facility.
13. 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.
14. 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.

D. SPECIAL CONDITIONS (continued)

15. 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 provide the "Non-Detect" sample 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.
  
16. Annual Report

The annual report shall be submitted by January 28 of each year for the previous calendar year from January 1 through December 31 (or an alternate 12 month period approved by the Department and listed in the O&M Manual). This report shall be submitted using report forms approved by the Department and shall include a summary of the monitoring and record keeping required by the Special Conditions and Standard Conditions of this permit. The report shall include the following:

  - a. Record of maintenance and repairs performed 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. List of specific industries from which sludge was received with the dry tons received from each;
  - c. The number of days the facility has discharged during the year, the discharge flow, the reasons discharge occurred and effluent analyses performed; and
  - d. A summary of the land application operations, the number of days of land application for each month, the total gallons and dry tons applied, the total acres used, crops grown, crop yields per acre, the application rate in gallons/acre per day and gallons and dry tons/acre for the year, the monthly and annual precipitation received at the facility, and a summary of all testing results. This report is in addition to the reporting requirements of Table A, Effluent Limitations and Monitoring Requirements.
  - e. A list of the best management practices (BMPs) that are being implemented as per Special Condition 22.
  
17. Nutrient Management
  - a. Nitrogen applications shall not exceed the Plant Available Nitrogen (PAN) approach.
  - b. If a crop is not harvested, the PAN rate shall not exceed 40 lbs/acre/year and grass vegetation must be maintained on the site.
  - c. PAN calculations, application amounts, crop yields and crop removal rates shall be listed in the annual report.
  
18. Antibiotic Requirements.
  - a. The permittee shall comply with and/or require that sludge received from the TEVA Pharmaceuticals USA facility in Mexico, Missouri, complies with the Water Protection Program's letter dated February 20, 2008, granting approval to land apply sludge generated during the manufacturing of antibiotics.
  - b. Antibiotic monitoring shall be conducted in accordance with test methods developed by TEVA Pharmaceuticals USA and approved by the Department of Natural Resources' Water Protection Program.
  - c. Copies of the approved test methods shall be placed in the O&M Manual required by Special Condition 16.
  - d. If additional antibiotics are to be produced that are not listed in Table A, the department shall be notified within 30 days of becoming aware of the production change. Notification shall include proposed monitoring test methods for the additional antibiotics for review and approval.
  - e. Sludge from the manufacture of antibiotics not listed in Table A shall not be land applied until the department is notified and a test method approved.
  - f. Industrial sludge received by the permittee from TEVA Pharmaceuticals USA shall be stabilized in the sludge storage basin(s) for a minimum of 14 days before land application of such sludge. This will provide an additional margin of safety for the breakdown of any residual antibiotics present in the sludge.

D. SPECIAL CONDITIONS (continued)

19. Other Pollutant Limitations and Loading Rates

- a. Oil and Grease Limitations. Oil and grease application shall not exceed 0.5% of soil weight or 10,000 pounds oil/acre/year for subsurface injection or soil incorporation. For surface application to growing vegetation, the sludge shall not exceed 15% oil & grease content and shall not exceed 1,000 pounds oil/acre. Avoid heavy application of oil and grease within 30 days before planting of row crops. Oil and grease sludges with low nitrogen content, more than 20:1 Carbon to Nitrogen ratio, may require supplemental nitrogen application to provide proper decomposition of the oil content and prevent nitrogen deficiencies for the crop.
- b. Metals Loading Limitations. Application of trace metals shall not exceed the concentrations and loading limits for each metal as specified in University of Missouri publication WQ 425, revised 4/95. When metals concentrations exceed values in Table 2 of WQ-425, the remaining metals capacity of the site will be calculated each time industrial sludge is spread. When the cumulative limit is reached, sludge addition will be halted.
- c. Soil Sodium Content. Soil content of sodium shall not exceed 10% Exchangeable Sodium Percentage.
- d. Chlorides Loading Limitations. Application of chlorides shall not exceed 500 pounds/acre/year. Chlorides are extremely mobile and will be leached into the soil with percolating water.
- e. Boron Loading Limitations. Application of boron shall not exceed a cumulative total of 600 pounds/acre.
- f. Toxic Organic Chemicals Limitations. Toxic organic chemicals shall not exceed background levels found in soils or concentrations listed in 40 CFR 268.40 unless alternate pollutant limits are listed in this permit. Consideration of alternate limits will be based on review of detailed environmental assessment submitted in accordance with 10 CSR 20-8.020(3)(D).

20. Land Application of Industrial Sludge

- 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. No-Discharge Requirement. Sludge and wastewater shall be stored and land applied during suitable conditions so that there is no discharge of process wastes from the sludge storage basin, sludge drying pad, or land application site(s). Uncontaminated storm water runoff from land application sites may be discharged when land application was conducted in accordance with permit requirements. In no case shall the permittee cause violation of the Water Quality Standards rules for general criteria and/or specific criteria under 10 CSR 20-7.031.
- c. Permitted Sites. This permit authorizes land application of industrial sludge to those sites that have been public noticed and listed in the permit facility description. Permittee requests for additional sites including owned and/or non-owned property must follow permit modification procedures prior to land application. To request additional sites, the permittee shall submit a revised permit application Forms A and R along with (1) names and mailing addresses for the landowners and all downstream (adjacent) property owners for each application site, (2) topographic maps of each site, and (3) other pertinent information.
- d. Public Access Restrictions. Public access shall not be allowed to the land application site(s).
- e. Technical Standards. Sludge storage, handling and land application systems shall be designed and operated in accordance with 10 CSR 20-8.020(15), 10 CSR 20-8.170, and 10 CSR 20-8.200. Where minimum storage capacity is not provided, alternate sludge disposal shall be provided such as hauling to a landfill or other permitted treatment system. Hazardous waste regulated under the Missouri Hazardous Waste Law and regulations shall not be land applied under this permit.
- f. Subsurface Injection Requirement. Subsurface Injection or immediate incorporation after surface application shall be considered where feasible and practicable to reduce exposure to wash off by stormwater runoff and to retain nutrients in the soil for crop requirements. Dissolved Air Flotation (DAF) sludge from meat and poultry slaughter and processing facilities or other similar sludge with high oil and grease content shall be subsurface injected or immediately incorporated.
- g. Saturated/Frozen Conditions. There shall be no land application during frozen, snow covered, or saturated soil conditions. There shall be no application on days when there is observation by operator of an imminent or impending rainfall event. An on-site visual investigation of the field's soil moisture condition, followed by testing of the soils, will be made to determine whether land application can occur. The visual and soil test procedures will be reviewed and approved by the department as part of the O&M Manual.

D. SPECIAL CONDITIONS (continued)

- h. Slope and Runoff Restrictions.
    - (1) Do not place sludge in a location where it is reasonably certain that pollutants will be transported into waters of the state during stormwater runoff events.
    - (2) All application sites shall have a Soil and Water Conservation Plan to minimize soil erosion and stormwater runoff. The plan shall be developed in accordance with standards of the USDA, Natural Resources Conservation Service (NRCS). The plan shall be developed by a “certified” soil & water conservation planner and shall be included in the O&M Manual.
    - (3) Subsurface injection should be applied along the contour of the slope to minimize surfacing of liquids at the down gradient end of the injection trench.
    - (4) Sludge shall not be applied to slopes exceeding ten (10%) percent.
  - i. Buffer Zones. There shall be no land application within 300 feet of any down gradient pond, lake, sinkhole, losing stream or water supply withdrawal and within 150 feet of any dwelling. For surface application, there shall be no land application within 100 feet of gaining streams (Class P and C classified streams listed in Water Quality Standard rule under 10 CSR 20-7.031), 50 feet of wet weather gaining streams and tributaries (unclassified streams), or 50 feet of the property line. For subsurface injection, buffer zones may be reduced to 25 feet from gaining streams (classified and unclassified) and property lines.
  - j. Application Equipment. The application system shall be operated so as to provide uniform distribution of wastes over the entire land application site. Land application shall occur only during daylight hours.
  - k. Equipment Checks during Land Application. The application system and application site shall be visually inspected at least *once per hour* during land application to check for equipment malfunctions and runoff from the application site.
  - l. Storage Structure Observations. Sludge storage structures shall be checked visually at least once per month for structural integrity, visible leaks, and measurement of liquid sludge depth. Liquid depth shall be measured and reported as feet below the emergency overflow level of the basin.
  - m. Fact Sheets. Fact sheets shall be prepared for each application site giving the following information: Landowner’s name, address, telephone number, acreage, designation of buffer zones around limiting features, nutrient content of sludge applied and the application rates with the maximum per year.
  - n. Daily Log Sheets. Daily log sheets shall be prepared and kept for each application site showing amounts of sludge applied per acre, dates of application, nutrients applied, and crop yields.
21. Operation and Maintenance (O&M) Manual  
The permittee shall develop, maintain, and implement an O&M Manual that includes all necessary items to ensure the operation and integrity of the waste handling and land application systems. The O&M Manual shall be reviewed and updated at least every five years. Copies of the O&M Manual and subsequent revisions shall be submitted to the Regional Office for review and approval. At a minimum, a copy shall be submitted with any application for modification or reissuance of the permit. The O&M Manual shall include, but is not limited to, the following:
- a. Detailed topographic maps of the property showing all land application fields including the identification numbers for each field and tract. Each field and tract shall have an identification number for record keeping and tracking purposes. The maps shall also indicate separation distances from streams, ponds, wells, and property lines and shall indicate areas exceeding 10 percent slopes and other areas that are not suitable for land application. The maps shall also include the location of all buildings, pump stations, land application pipelines, land application riser connections, underground terrace outlets, domestic wastewater treatment systems, and other waste handling units.
  - b. Start up procedures, field supervision during operation, and shutdown procedures of irrigation equipment.
  - c. Procedures for providing the separation distances required by this permit and as specified in 10 CSR 20-8.020(15)(B).
  - d. Sample collection, preservation, and testing procedures.
  - e. Procedures for determining Plant Available Nitrogen (PAN) loading rates.
  - f. Record keeping forms for tracking each field, tract, and storage structure. This shall include testing results, crops, yields, and application rates for each field. Records for each field and tract shall include dates and amounts applied.
  - g. A procedure for promptly reporting spills or discharges to the permittee plant manager and to the department.
  - h. A procedure for recording repair work on application equipment and land application lines, including the reason for the repair work and the material used for the repair.
  - i. A procedure for routine visual inspections of the storage and application system for overflows or other operational problems.
  - l. A procedure to assure that all appropriate employees are properly trained in operation of the waste systems and are familiar with the O&M Manual.
  - m. Procedure for adjusting application periods and rates based on soil infiltration capacity, soil moisture content, and percent of soil field (saturation) capacity.
  - n. List of number, size, and capacity of waste removal, hauling, and land application equipment.
  - o. Number of suitable days each year when land application will occur based on historical 1-in-10-year wettest precipitation, capacity of spreading equipment, and personnel available.

D. SPECIAL CONDITIONS (continued)

- p. Procedure to avoid application if there is a weather forecast for significant precipitation within 24 hours.
  - q. Nutrient Management Plan.
  - r. Approved Antibiotic Testing Methods
  - s. List of approved industry groups as required by Special Condition 3.e.
  - t. A list of best management practices (BMPs) that will be designed, implemented, and maintained in order to prevent pollution of stormwater from this facility's activities.
22. Records of sludge received and/or land applied shall be maintained for five (5) years and made available to the department upon request. The record must include the generator, date, and volume of waste received.

**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**FACT SHEET**  
**FOR THE PURPOSE OF MODIFICATION**  
**MO-0135801**  
**MISSOURI BIOSOLIDS NORTH FARMS**

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of stormwater from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

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

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

This Factsheet is for a Minor.

**Part I – Facility Information**

Facility Type: NON-POTW – Storage and Land Application Facility – SIC #4952 & #4953

Facility Description:

This facility receives, stores, and land applies biosolids, sludge, septage, domestic wastes, and industrial wastes. The operation accepts sludge on a space-available basis and stores the liquids in 2 waste storage lagoons and dewater solids on two drying pads that drain in to these lagoons.

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

- Yes  
 - No.

Application Date: 02/27/14  
Expiration Date: 07/26/14

**PERMITTED FEATURE(S) TABLE:**

OUTFALL	TREATMENT LEVEL	EFFLUENT TYPE	STORAGE VOLUME (GALLONS)	DISTANCE TO CLASSIFIED SEGMENT (MI)
#001	Land Application	Emergency Discharge	4,492,969	3.2

Facility Performance History:

This facility was last inspected on April 28, 2010 and was found to be in compliance. On a previous inspection this facility was not in compliance due to a failure to report monitoring activities. A letter of warning was issued and situation was resolved.

Comments

This facility has added an interconnected sludge storage cell with an associated compacted clay drying pad. Missouri Biosolids North Farms is approved to accept sludge from Unilever and from any facility producing Major Group 20 sludge and wastewater. No additional parameters need to be monitored with this operational change.

**Part II – Operator Certification Requirements**

- This facility is not required to have a certified operator.

**Part III– Operational Monitoring**

- As per [10 CSR 20-9.010(4)], the facility is not required to conduct operational monitoring.

**Part IV – Receiving Stream Information**

While this facility is no discharge, a receiving stream is listed for the purposes of showing what stream would be affected in the event of an emergency release due to an acute or chronic rain event. 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 1<sup>st</sup> 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: PERMITTED FEATURE #001**

WATERBODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC	EDU**
<b>Storage Basin Outfall</b>					
Tributary to the Fourmile Branch	NA	--	General Criteria	10300102-1502	Ozark/Moreau/Loutre
Fourmile Branch	C	3960	IRR, LWV,HHP, SCR, AQL, WBC-B		
<b>Land Application Area (Watershed 1)</b>					
Tributary to Renfro Creek	NA	--	General Criteria	10300102-1002	Ozark/Moreau/Loutre
Renfro Creek	C	03960	IRR, LWV,HHP, SCR, AQL, WBC-B		
<b>Land Application Area (Watershed 2)</b>					
Tributary to tributary to Auxvasse Creek	NA	---	General Criteria	10300102-1502	Ozark/Moreau/Loutre
Tributary to Auxvasse Creek	C	3960	IRR, LWV,HHP, SCR, AQL, WBC-B		

\* - Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life (AQL), Human Health Protection (HHP), Cool Water Fishery(CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND), Groundwater (GRW).

**RECEIVING STREAM MONITORING REQUIREMENTS:**

No receiving water monitoring requirements recommended at this time.

**Part IV – Rationale and Derivation of Effluent Limitations & Permit Conditions**

**ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:**

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

- 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(3)], 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.

- No degradation proposed and no further review necessary. Facility did not apply for authorization to increase pollutant loading or to add additional pollutants to their discharge.

**AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:**

As per [10 CSR 20-6.010(3)(B)], ... An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

**BIOSOLIDS & 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://dnr.mo.gov/env/wpp/pub/index.html>, items WQ422 through WQ449.

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

**COMPLIANCE AND ENFORCEMENT:**

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

- The permittee/facility is not currently under Water Protection Program enforcement action.

**PRETREATMENT PROGRAM:**

The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

- The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

**REMOVAL EFFICIENCY:**

Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD<sub>5</sub>) and Total Suspended Solids (TSS) for Publicly Owned Treatment Works (POTWs)/municipals. This is a no-discharge facility, therefore removal efficiency is 100% and influent monitoring is not required.

**SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):**

Sanitary Sewer Overflows (SSOs) are defined as untreated sewage releases and are considered bypassing under state regulation [10 CSR 20-2.010(11)] and should not be confused with the federal definition of bypass. SSOs result from a variety of causes including blockages, line breaks, and sewer defects that can either allow wastewater to backup within the collection system during dry weather conditions or allow excess stormwater and groundwater to enter and overload the collection system during wet weather conditions. SSOs can also result from lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs include overflows out of manholes, cleanouts, broken pipes, and other into waters of the state and onto city streets, sidewalks, and other terrestrial locations.

Inflow and Infiltration (I&I) is defined as unwanted intrusion of stormwater or groundwater into a collection system. This can occur from points of direct connection such as sump pumps, roof drain downspouts, foundation drains, and storm drain cross-connections or through cracks, holes, joint failures, faulty line connections, damaged manholes, and other openings in the collection system itself. I&I results from a variety of causes including line breaks, improperly sealed connections, cracks caused by soil erosion/settling, penetration of vegetative roots, and other sewer defects. In addition, excess stormwater and groundwater entering the collection system from line breaks and sewer defects have the potential to negatively impact the treatment facility.

Missouri RSMo §644.026.1.(13) mandates that the Department issue permits for discharges of water contaminants into the waters of this state, and also for the operation of sewer systems. Such permit conditions shall ensure compliance with all requirements as established by sections 644.006 to 644.141. Standard Conditions Part I, referenced in the permit, contains provisions requiring proper operation and maintenance of all facilities and systems of treatment and control. Missouri RSMo §644.026.1.(15) instructs the Department to require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities. To ensure that public health and the environment are protected, any noncompliance which may endanger public health or the environment must be reported to the Department within 24 hours of the time the permittee becomes aware of the noncompliance. This includes SSOs and other releases as discussed above. Standard Conditions Part I, referenced in the permit, contains the reporting requirements for the permittee when bypasses, sanitary sewer overflows, and upsets occur. The Department has been asked whether this includes “basement back-ups” hereby referred to as “building backups”, which are releases of sewage from sewer systems into homes and other buildings which do not necessarily reach waters of the state. The Department is charged with protecting public health, not just the environment, in the process of regulating wastewater treatment facilities. The release of sewage from the collection system into a location where public exposure can occur is a threat to public health, whether it reaches waters of the state or not. Just as an overflow of sewage from a manhole in a street is a threat to public health, so too is an overflow of sewage into homes and other buildings. Such occurrences must be reported within 24 hours of the permittee becoming aware of the occurrence. The permittee must also make a reasonable attempt to become aware of and mitigate any such overflow, if it is associated with the permittee’s portion of the collection system.

The permittee is not liable for reporting a building back-up or overflow caused by a blockage in the private service connection to the permittee’s portion of the sewer system. A permittee is not required to report an overflow into a storage device intended to contain sewage, such as a storage basin at a lift station, or a storage tank or tunnel associated with the collection system, as these facilities are required to be secured to prevent the public from being exposed to the sewage. Neither of these situations is considered non-compliance. In instances where the cause of a building back-up is unclear, it is recommended the permittee report the back-up, and then explain in a follow up written report if the cause was determined to be associated with a private service connection.

- This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

**SCHEDULE OF COMPLIANCE (SOC):**

Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes 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. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit includes interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1) and 10 CSR 20-7.031(11), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.
- For a newly constructed facility in most cases. Newly constructed facilities must meet applicable effluent limitations when discharge begins, because the facility has installed the appropriate control technology as specified in a permit or antidegradation review. A SOC is allowed for a new water quality based effluent limit that was not included in a previously public noticed permit or antidegradation review, which may occur if a regulation changes during construction.
- To develop a TMDL, UAA, or other study associated with development of a site specific criterion. A facility is not prohibited from conducting these activities, but a SOC may not be granted for conducting these activities.

In order to provide guidance to Permit Writers in developing SOC's, and attain a greater level of consistency, on October 25, 2012 the Department issued a policy on development of SOC's. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as an affordability analysis.

- This permit does not contain a SOC.

**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.

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

**WATER QUALITY STANDARDS:**

Per [10 CSR 20-7.031(4)], 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 20-7.015(9)(G) states a bypass means the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending, 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.

- This facility does not anticipate bypassing.

## **Part V – Permit Limits Determination**

### **PERMITTED FEATURE #001 – STORAGE BASIN**

- **Freeboard.** Monitoring requirement only.
- **Precipitation.** Monitoring requirement only.
- **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 20-6.015(4)(C)]
- **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 20-6.015(4)(C)]
- **Fecal Coliform.** 200#/100mL Daily Maximum and Monthly Average in accordance with 10 CSR 20-8.020(15)(F)9.A.

### **PERMITTED FEATURE #002 – IRRIGATION FIELD**

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

#### **Sampling Frequency Justification:**

Sampling frequency has been determined to be appropriate so it has been retained from the previous state operating permit. Otherwise explain why you chose the frequency you did.

#### **Sampling Type Justification:**

Due to the discharge being from irrigation from a storage basin, a grab sample is a representative and appropriate sample type. Variation in nutrient concentration is not expected over a 24 hour period.

## **Part VI – 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.

- The Department is not required to determine findings of affordability.

## **Part VII – 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 and 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 July 18, 2014 to August 18, 2014. No responses received.

**DATE OF FACT SHEET:** JULY 1, 2014

**COMPLETED BY:**

**DIANE REINHARDT, ENVIRONMENTAL ENGINEER  
MISSOURI DEPARTMENT OF NATURAL RESOURCES  
WATER PROTECTION PROGRAM  
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STANDARD CONDITIONS FOR NPDES PERMITS  
ISSUED BY  
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES  
MISSOURI CLEAN WATER COMMISSION  
REVISED  
NOVEMBER 1, 2013

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(a)(1);
    - 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. **Twenty-Four Hour 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.



STANDARD CONDITIONS FOR NPDES PERMITS  
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- 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. **Sanitary Sewer Overflow Reporting.** The following requirements solely reflect reporting obligations, and reporting does not necessarily reflect noncompliance, which may depend on the circumstances of the incident reported.
- a. **Twenty-Four Hour (24-Hour) Reporting.** The permittee or owner shall report any incident in which wastewater escapes the collection system such that it reaches waters of the state or it may pose an imminent or substantial endangerment to the health or welfare of persons. 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 incident. A written submission shall also be provided within five (5) business days of the time the permittee or owner becomes aware of the incident. The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours. The five (5) day reports may be provided via the current electronic method approved by the Department.
  - b. **Incidents Reported via Discharge Monitoring Reports (DMRs).** The permittee or owner shall report any event in which wastewater escapes the collection system, which does not enter waters of the state and is not expected to pose an imminent or substantial endangerment to the health or welfare of persons, which occur typically during wet weather events. Relevant information shall be provided with the permittee's or owner's DMRs.
4. **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.
5. **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.
6. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, 4, and 7 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.
7. **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.
8. **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 28<sup>th</sup> 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.
  - 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.



STANDARD CONDITIONS FOR NPDES PERMITS  
ISSUED BY  
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES  
MISSOURI CLEAN WATER COMMISSION  
REVISED  
NOVEMBER 1, 2013

## 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.



STANDARD CONDITIONS FOR NPDES PERMITS  
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MISSOURI CLEAN WATER COMMISSION  
REVISED  
NOVEMBER 1, 2013

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.
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**  
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**March 1, 2014**

**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 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 <sup>1</sup>	
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

<sup>1</sup> 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 <sup>1</sup>	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	36
Zinc	2,800

<sup>1</sup> 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 <sup>1</sup>	Annual	Total <sup>1</sup>	Annual	Total <sup>1</sup>
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

<sup>1</sup> 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 <sup>1</sup>**

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

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

<sup>2</sup> 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.

<sup>3</sup> Total Dioxin Toxicity Equivalents (TEQ) in soils, based on a risk assessment under 40 CFR 744, May 1998.

<sup>4</sup> Case by case review. Concentrations in sludge should not exceed the 95<sup>th</sup> 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 removals unless the nitrogen content of the biosolids does not exceed 50,000 milligrams per kilogram of total nitrogen on a dry weight basis and biosolids application rate is less than two dry tons per acre per year.
  - i. PAN can be determined as follows and is in accordance with WQ426  
 $(\text{Nitrate} + \text{nitrite nitrogen}) + (\text{organic nitrogen} \times 0.2) + (\text{ammonia nitrogen} \times \text{volatilization factor}^1)$ .
 

<sup>1</sup> 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, 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:  

$$(\text{Nitrate} + \text{nitrite nitrogen}) + (\text{organic nitrogen} \times 0.2) + (\text{ammonia nitrogen} \times \text{volatilization factor}^1).$$

<sup>1</sup> 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  $\geq 70\%$  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  $\geq 70\%$  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 and 2)			
	Metals, Pathogens and Vectors	Nitrogen TKN <sup>1</sup>	Nitrogen PAN <sup>2</sup>	Priority Pollutants and TCLP <sup>3</sup>
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	-- <sup>4</sup>
10,001 +	1 per week	1 per week	1 per day	-- <sup>4</sup>

<sup>1</sup> Test total Kjeldahl nitrogen, if biosolids application is 2 dry tons per acre per year or less

<sup>2</sup> Calculate plant available nitrogen, if biosolids application is more than 2 dry tons per acre per year.

<sup>3</sup> 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.

<sup>4</sup> 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.

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 28<sup>th</sup> 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  $\frac{1}{4}$ ,  $\frac{1}{4}$ , Section, Township, Range, and county, or UTM coordinates. If biosolids application exceeds 2 dry tons/acre/year, reports biosolids nitrogen results, Plant Available Nitrogen (PAN) in pounds/acre, crop nitrogen requirement.
- 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.



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
 WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH  
**FORM A – APPLICATION FOR CONSTRUCTION OR OPERATING PERMIT  
 UNDER MISSOURI CLEAN WATER LAW**

CP000127  
 A12930 A217997  
**FOR AGENCY USE ONLY**  
 CHECK NUMBER 123  
 DATE RECEIVED 2/7/14 FEE SUBMITTED \$750.00

**Note** ▶ PLEASE READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM.

1. This application is for:

An operating permit and antidegradation review public notice

A construction permit following an appropriate operating permit and antidegradation review public notice

A construction permit and concurrent operating permit and antidegradation review public notice

A construction permit (submitted before Aug. 30, 2008 or antidegradation review is not required)

An operating permit for a new or unpermitted facility Construction Permit # \_\_\_\_\_

An operating permit renewal: permit # MO-\_\_\_\_\_ Expiration Date \_\_\_\_\_

An operating permit modification: permit # MO-\_\_\_\_\_ Reason: \_\_\_\_\_

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

**2. FACILITY**

NAME		TELEPHONE WITH AREA CODE	
Missouri Biosolids North Farms			
ADDRESS (PHYSICAL)		CITY	STATE ZIP CODE
County Road 285, 0.75 miles south of Route E		Auxvasse	MO 65231

**3. OWNER**

NAME		E-MAIL ADDRESS	TELEPHONE WITH AREA CODE
Missouri Biosolids LLC		mobiosolids@ktis.ne	(573) 592-0191
ADDRESS (MAILING)		CITY	STATE ZIP CODE
2927 County Road 253		Columbia	MO 65202

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

**4. CONTINUING AUTHORITY**

NAME		TELEPHONE WITH AREA CODE	
same as Owner above			
ADDRESS (MAILING)		CITY	STATE ZIP CODE

**5. OPERATOR**

NAME		CERTIFICATE NUMBER	TELEPHONE WITH AREA CODE
ADDRESS (MAILING)		CITY	STATE ZIP CODE

**6. FACILITY CONTACT**

NAME		TITLE	TELEPHONE WITH AREA CODE
Brett Shryock			(573) 219-6583
			FAX

**7. ADDITIONAL FACILITY INFORMATION**

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

001 SE 1/4 NE 1/4 Sec 19 T 49N R 10W Calla County  
 UTM Coordinates Easting (X): \_\_\_\_\_ Northing (Y): \_\_\_\_\_  
*For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)*

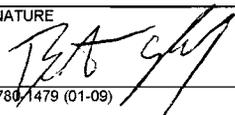
002 \_\_\_\_\_ 1/4 \_\_\_\_\_ 1/4 Sec \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ \_\_\_\_\_ County  
 UTM Coordinates Easting (X): \_\_\_\_\_ Northing (Y): \_\_\_\_\_

003 \_\_\_\_\_ 1/4 \_\_\_\_\_ 1/4 Sec \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ \_\_\_\_\_ County  
 UTM Coordinates Easting (X): \_\_\_\_\_ Northing (Y): \_\_\_\_\_

004 \_\_\_\_\_ 1/4 \_\_\_\_\_ 1/4 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 4952 and NAICS 221320 002 – SIC 4953 and NAICS 562219  
 003 – SIC \_\_\_\_\_ and NAICS \_\_\_\_\_ 004 – SIC \_\_\_\_\_ and NAICS \_\_\_\_\_

<b>8. ADDITIONAL FORMS AND MAPS NECESSARY TO COMPLETE THIS APPLICATION</b> (Complete all forms that are applicable.)			
A.	Is your facility a manufacturing, commercial, mining or silviculture waste treatment facility? If yes, complete Form C (unless storm water only, then complete U.S. Environmental Protection Agency Form 2F per Item C below).	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
B.	Is your facility considered a "Primary Industry" under EPA guidelines: If yes, complete Forms C and D.	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
C.	Is application for storm water discharges only? If yes, complete EPA Form 2F.	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
D.	Attach a map showing all outfalls and the receiving stream at 1" = 2,000' scale.		
E.	Is wastewater land applied? If yes, complete Form I.	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
F.	Is sludge, biosolids, ash or residuals generated, treated, stored or land applied? If yes, complete Form R.	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
<b>9. DOWNSTREAM LANDOWNER(S)</b> Attach additional sheets as necessary. See Instructions. (PLEASE SHOW LOCATION ON MAP. SEE 8.D ABOVE).			
NAME Shryock Cousins			
ADDRESS 2600 County Road 240		CITY Columbia	STATE ZIP CODE MO 65202
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) Brett Shryock, Member		TELEPHONE WITH AREA CODE (573) 219-6583	
SIGNATURE 		DATE SIGNED 2-21-2014	

MO 780.1479 (01-09)

**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, if applicable?
- Form D, if applicable?
- Form 2F, if applicable?
- Form I (Irrigation), if applicable?
- Form R (Sludge), if applicable?

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

**1.00 FACILITY INFORMATION**

- 1.10 Missouri Biosolids North Farm MO - 0135801
- 1.20 Application for Construction Permit and Operating Permit Renewal  
Attached Engineering Report, Plans and Specifications from Agricultural Engineering Associates of Uniontown, Kansas (pg 7-8)
- 1.30 Sludge generated 12 months per year. Sludge is accepted at our facility on an as-space available basis.
- 1.40 1 Facility Outfall  
This facility will consist of 2 liquid storage basins and 2 dry storage pads. The original sludge storage basin will be used as a settling basin. It will discharge through a pipe into the new second sludge storage basin. The original dry storage pad will be used to store dry materials hauled to our facility. The rainwater from that pad will drain into storage basin #1. A new dry storage pad will be constructed which will drain into basin #2. The new second sludge storage basin will have an emergency discharge spillway which will be the one and only outfall for this facility.
- Storage and Land Application Facility – SIC #4952 & #4953 – No Certified Operator Required
- We are requesting:  
This facility is authorized to receive biosolids, sludge, septage, grease, and other domestic wastes.  
This facility is authorized to receive approved sludge, residuals, and other industrial wastes as detailed in the application submitted, with special conditions.

**2.00 STORAGE BASINS**

- 2.10 2 storage basins: The current sludge storage basin and the proposed new earthen basin, both have clay earthen liners.
- 2.20 Attachment A: Profile Sketch (pg 9)  
Basin #2: Length 240' Width 215'  
Depth 16' Freeboard 2'  
Berm Width 10' % slope 3 to 1
- 2.21 Storage Basin Volume:  
Basin #1: Gallons: 121,000 Permanent Volume + 1,534,000 Storage = 1,655,000  
Basin #2: Gallons: 273,000 Permanent Volume + 2,830,750 Storage = 3,103,750 gallons
- 2.30 Storage Basin Operating Levels:  
Basin #2: Maximum water level 2 feet below emergency overflow level,  
Minimum operating water level 14 feet below emergency overflow level.
- 2.40 Storage Basin Design Storage Capacity:  
365 days for Basin #1 and #2 storage between minimum and maximum operating levels for 1-in 10 year storm water flows.

- 2.50 Water Balance Test results: Attached Engineer Geological Investigation (pg 10-16)
- 2.60 Sludge Management Plan for materials that are not land applied:  
At any time sludge was deemed unsuitable for land application, the Department will be contacted for approval to haul the material to an approved land fill.
- 2.70 Closure Plan for Lagoons, Storage Basins and Treatment Units:  
We will provide written notification 180 days prior to any lagoon closing. We will mix the biosolids and then land apply at agronomic rates. Upon clean out of the lagoon the banks will be leveled with a bull dozer, the area will be crowned to ensure proper drainage from the site, and the total disturbed area will be seeded and mulched.

**3.00 LAND APPLICATION SYSTEM**

- 3.10 10 Location Sites (pg 17)  
1327 Total Available Acres  
Minimum & Maximum % field slopes <3%  
County Callaway

Location:		Sec	T	R	Acres
Hughes		SW ¼ 18	49N	10W	111
Linnenbringer		SE ¼ 18	49N	10W	150
Elaine		SW ¼ 17	49N	10W	79
Rumins		NW ¼ 19	49N	10W	250
Scanland		NE ¼ 19	49N	10W	240
Hovey		NW ¼ 20	49N	10W	216
Boulware	NW ¼ SE ¼	20	49N	10W	41
Sprock	N ½ SW ¼	19	49N	10W	95
Blansett	S ½ SW ¼	19	49N	10W	85
McCray	S ½ SE ¼	19	49N	10W	60

- 3.12 Type of Vegetation:  
We typically land apply sludge before planting corn. We fertilize using a yield goal of 200 bushels/acre. With most of the application fields under center pivot irrigation we have seen a 5 year corn average of around 212 bushels/acre. A rotation of soybeans will follow the corn crop.
- 3.20 Annual Sludge Production:  
We will empty the sludge storage basins twice annually, allowing for a maximum of 8,729,500 gallons of sludge to be land applied at an unknown percent solids (percent solids varies each year but we always follow our Nutrient Management Plan).
- 3.21 Sludge is land applied according to our Nutrient Management Plan, usually around 3 dry ton/year per acre. Land application occurs when the field conditions are suitable. Land application may occur any month suitable for field work.
- 3.22 Land Application Rate is based on Nutrient Management Plan.  
Prior to land application, the sludge and soil is tested according to our permit requirements. The sludge is also tested for several things, including Nitrogen and Phosphorus. These levels are constantly changing.

This is an EXAMPLE of the sludge analyses and the rate applied:

Previous Crop: Soybeans

Proposed Crop: Corn

Sludge = 3.4% solids

$$\frac{2000 \text{ lb}}{3.4} = 588.23 \times 100 = 58823 \text{ lbs sludge} = 1 \text{ dry ton}$$

Nitrogen: 62 lbs PAN/ton dry material

Corn yield goal = 200 bu/acre

Crop needs 186 lbs/acre PAN to produce goal

Apply 3 dry tons of sludge/acre

3 dry ton = 176,470 lbs sludge

$$\frac{176,470 \text{ lbs}}{8.34 \text{ lbs/gal}} = 21,159 \text{ gal/acre to deliver nitrogen requirement}$$

$$\frac{2,295,013 \text{ gallons}}{21,159 \text{ gal/acre}} = 108.46 \text{ acres needed to empty basin}$$

Phosphorous: Do not apply biosolids to soil that contains more than 800 lbs/acre of available phosphorus.

55lbs P1/ton dry material

55 x 2.27 = 124.85 lbs P205/ton

124.85 x 3 ton/acre = 374.55 lbs P205/acre

200 bu corn requires 86 lbs P205

No additional P205 is needed

### 3.30 Equipment:

Land application is done with subsurface injection with a dragline and toolbar and also a slinger spreader. Biosolids are applied at agronomic rates based on a nutrient management plan, biosolids nature, and soil test results.

#### Liquid Application:

The lagoon will be mixed with lagoon pump agitators to ensure the biosolids are consistent as possible. The houle pumps are about 50 feet long and are powered by farm tractors. Once the lagoon is mixed, a hose is attached to the discharge port on the houle pump and connected to the intake side of the high pressure pump. The high pressure pump feeds the sludge through the manure drag line hose. The manure drag line hose is attached to the farm star injection toolbar. The toolbar is pulled back and forth by a farm tractor applying the biosolids at agronomic rates. It takes a minimum of four people to apply biosolids; one is at the lagoon operating the pumps, a second is monitoring the manure drag line hose, the third is operating the tractor and toolbar, and the fourth is sampling the biosolids every hour for percent solids. Using this information, as well as the analytical nutrient data the operator of the tractor and toolbar can accurately apply the biosolids. Once land application is complete, the hose is disconnected from the tractor and toolbar. A foam pig is inserted into the manure dragline hose and is blown through the line with a high volume air compressor. By doing this it pushes the biosolids that are still in the line back to the lagoon. After the

hose is clean, it is spooled on the hose reel. Using the umbilical hose system is a safe and efficient way of biosolids land application.

**Dry Application:**

Using the front end loader the biosolids will be transferred from the dry storage pad to a knight spreader. The operator will spread the biosolids at agronomic rates based on the nutrient management plan.

Equipment Capacity 60,000 gallons per hour; Unknown Total hours of operation per year

**3.40 Public Use/Access Sites:**

Public access to the application sites shall be restricted for 180 days unless the sludge is either subsurface injected or incorporated. If the sludge is subsurface injected or incorporated then public access to irrigation site(s) shall be restricted 60 days after application.

**3.50 Separation Distance**

There shall be no land application within 300 feet of any sinkhole, losing stream or other structure or physiographic feature that may provide direct connection between the ground water table and the surface, or water supply withdrawal; 300 feet of any lake or pond used for water supply; 100 feet of other ponds and lakes; 100 feet of gaining streams; 50 feet of intermittent or wet weather streams; 150 feet of dwelling or public use areas excluding roads or highways; or 50 feet inside the property line. For subsurface injection, buffer zones may be reduced to 25 feet from gaining streams (classified and unclassified) and property lines.

3.60 SOILS INFORMATION: Attached Engineer Geological Investigation (pg 10-16)

3.70 Nutrient Management Plan: Attached Operations & Maintenance Manual (pg 20-25)

3.80 Geologic Investigation: January 24, 2014. Project ID Number LWE14053 (pg 18-19)

3.81 Ground Water Monitoring Wells: None

3.90 Current Copy of Operation and Maintenance Plan, last updated 2014, attached. (pg 20-25)

3.91 Topography map (pg 17)

3.92 Facility Sketch (pg 7)

**4.00 INDUSTRIAL PROCESS INFORMATION**

4.10 This is a storage and land application facility. Materials are treated before they arrive as there is no treatment that takes place on site.

4.11 We currently have permission to receive industrial waste from the following in SIC Major Group 20:

- Dawn Foods,
- Cargill Turkey Products,
- Conagra Foods,
- Nestle Purina Pet Care Co,

Triumph Foods,  
Tyson Foods

We request to add Unilever to this. Sludge test results included (pg 26-30).

We would like permission to take industrial waste from any SIC Major 20 food group, not limited to the above list, given we test the materials before application and follow our Nutrient Management Plan for land application.

Requesting to continue receiving industrial sludge from:

TEVA Pharmaceuticals USA in Mexico, Missouri - SIC Group 283: Drugs

with the following special conditions:

TEVA Requirements:

- (a) The permittee shall comply and/or require that sludge received from the TEVA Pharmaceuticals USA facility in Mexico, Missouri complies with the Water Protection Program's letter dated February 20, 2008 granting approval to land apply sludge generated during the manufacturing of antibiotics.
- (b) Antibiotic monitoring shall be conducted in accordance with test methods developed by TEVA Pharmaceuticals USA and approved by the Department of Natural Resources' Water Protection Program.
- (c) Copies of the approved test methods shall be placed in the operation and maintenance manual.
- (d) If additional antibiotics are to be produced that are not listed in Table A, the department shall be notified within 30 days of becoming aware of the production change. Notification shall include proposed monitoring test methods for the additional antibiotics for review and approval.
- (e) Sludge from the manufacture of antibiotics not listed in Table A shall not be land applied until the department is notified and a test method approved.
- (f) Industrial sludge received by the permittee from TEVA Pharmaceuticals USA shall be stabilized in the sludge storage basin(s) for a minimum of 14 days before land application. This will provide an additional margin of safety for the breakdown of any residual antibiotics present in the sludge.

Testing for Antibiotics, Methanol, Methylene Chlorine, Toluene, and Acetone shall only be conducted when the facility is land applying sludges from TEVA Pharmaceuticals USA facility in Mexico, Missouri, which have been stored for less than four weeks in the storage basin(s). If testing is not required, please report "Not Required" for those parameters on the Discharge Monitoring Report.

4.20 None used

4.31 Form F

4.32 No hazardous wastes in the material to be land applied.

4.40 A. NO Pollutants listed in 40 CFR 268.40 believed to be present in detectable concentrations.

B. NO Pollutants listed in 10 CSR 20-7.031 believed to be present in detectable concentrations.

C. NO 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.

4.50 Environmental Assessment: No pollutants detected exceed the criteria in section 4.40

**5.00 SOIL TESTING RESULTS**

All soils have been tested according to DMR. Refer to latest submitted DMR with any questions.

**6.00 LAND LIMITING CONSTITUENTS FOR LAND APPLICATION**

All biosolids that we currently receive, and plan to receive in the future, have been tested according to our current permit. Refer to previous DMR with any questions.

Missouri Biosolids LLC currently has another state operating permit, MO-0131342. Both our facilities are operated in similar fashion and we feel the Home Place permit, that was renewed October 23, 2012, is doing a great job of protecting water quality. As we move forward, our goal is to word both our permits very close to the same with regards to reporting frequencies and testing that is required, specifically Effluent Limitations and Monitoring Requirements. This would create a situation easier to manage for Missouri Biosolids LLC and for the MO Department of Natural Resources.

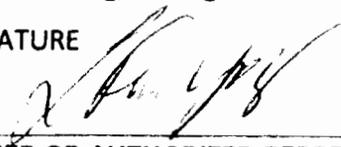
**7.00 CERTIFICATION**

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 IMPRISONMENT.

**CONSULTING ENGINEER**—Name, Official Title and Engineering Firm      PHONE NUMBER

L. Frank Young, P.E. Agricultural Engineering Associates      (620) 756-1000

SIGNATURE



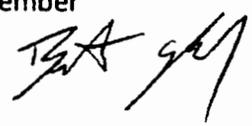
DATE SIGNED

2-21-2014

**OWNER OR AUTHORIZED REPRESENTATIVE**—Name and Official Title      PHONE NUMBER

Brett Shryock, Member      (573) 219-6583

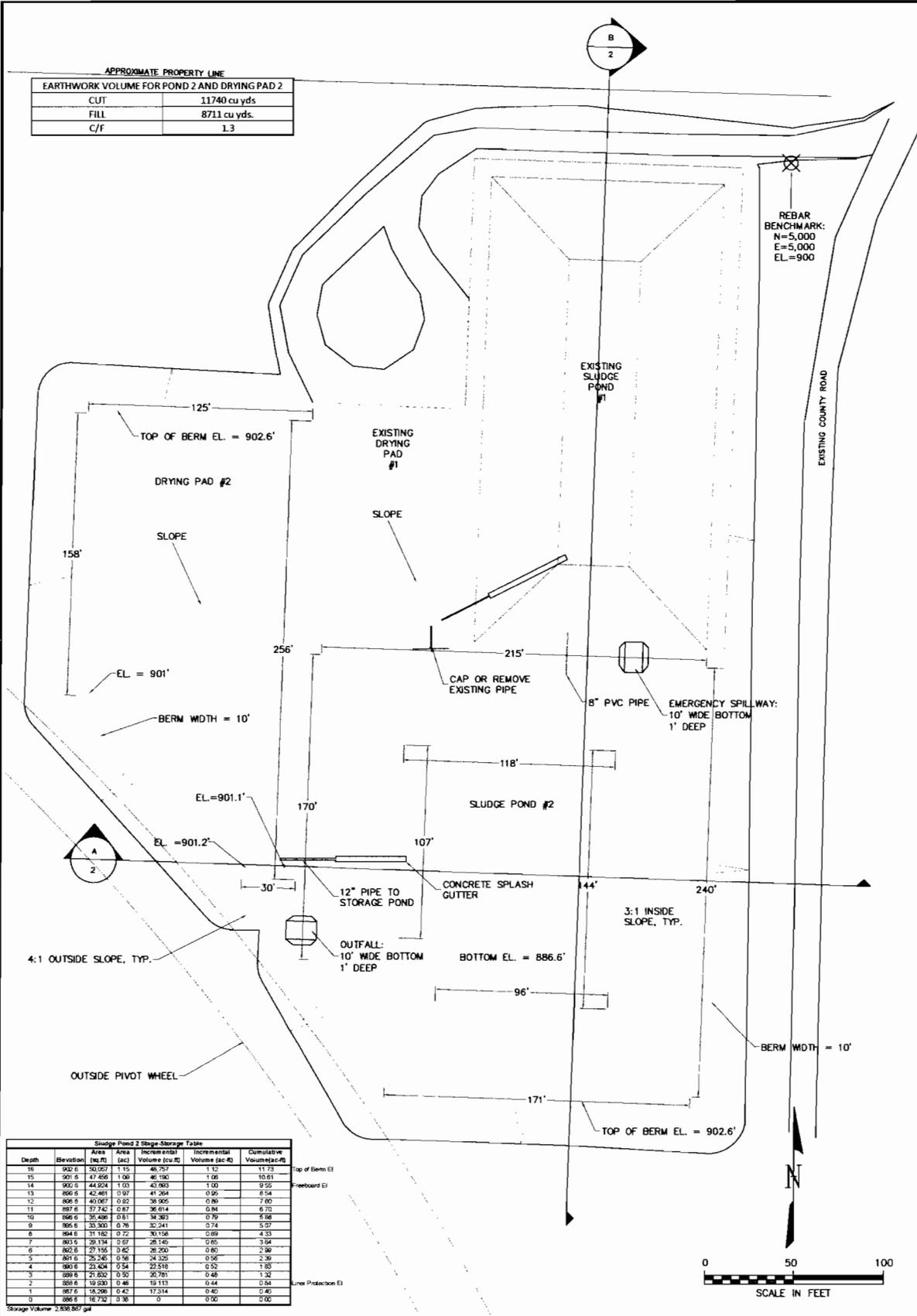
SIGNATURE



2-21-2014 DATE SIGNED

APPROXIMATE PROPERTY LINE

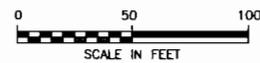
EARTHWORK VOLUME FOR POND 2 AND DRYING PAD 2	
CUT	11740 cu yds
FILL	8711 cu yds.
C/F	1.3



Sludge Pond 2 Storage Table

Depth	Elevation	Area (sq ft)	Area (ac)	Incremental Volume (cu ft)	Incremental Volume (ac-ft)	Cumulative Volume (cu ft)	Cumulative Volume (ac-ft)
16	902.0	50,057	1.15	48,757	1.12	11,73	Top of Berm El
15	901.5	47,846	1.08	48,130	1.08	10,63	
14	901.0	44,824	1.03	43,893	1.00	9,55	Freeboard El
13	899.5	42,461	0.97	41,264	0.95	8,54	
12	898.0	40,067	0.92	38,905	0.89	7,65	
11	897.0	37,742	0.87	36,914	0.84	6,79	
10	896.0	35,496	0.81	34,393	0.79	5,98	
9	895.0	33,303	0.76	32,241	0.74	5,27	
8	894.0	31,162	0.72	30,158	0.69	4,53	
7	893.0	29,114	0.67	28,140	0.65	3,84	
6	892.0	27,155	0.62	26,200	0.60	3,20	
5	891.0	25,245	0.58	24,325	0.56	2,60	
4	890.0	23,404	0.54	22,510	0.52	2,03	
3	889.0	21,632	0.50	20,761	0.48	1,52	
2	888.0	19,930	0.46	19,113	0.44	1,04	Lower Production El
1	887.0	18,298	0.42	17,514	0.40	0,60	
0	886.0	16,732	0.38	0	0,00	0,00	

Storage Volume: 2,530,807 gal



MISSOURI BIOSOLIDS  
 2927 COUNTY ROAD 253  
 COLUMBIA, MO 65202

ENGINEER LFY  
 DATE 1/29/2014

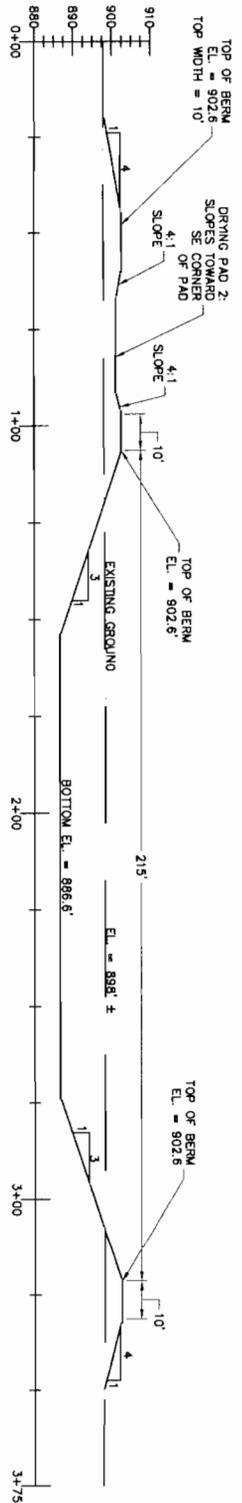
DRWN BY KRN

CHK'D BY LFY  
 DATE 1/29/2014

SLUDGE POND 2  
 & DRYING PAD 2

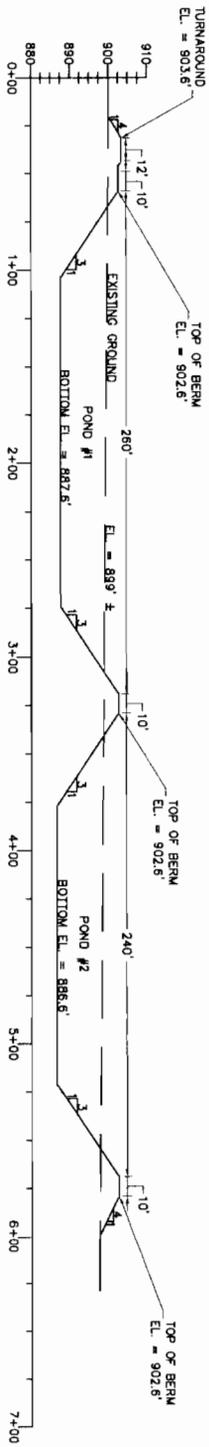
REV#	DATE	DESCRIPTION	PROJECT NO.
			3958
			DRAWING NO.
			1
			Rev. #
			Date

ELEVATION



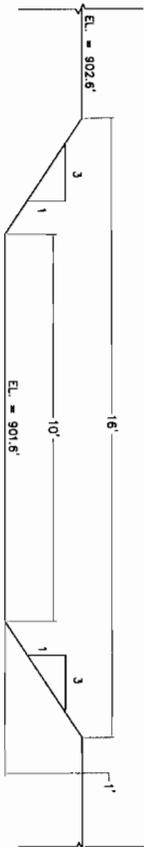
SECTION A  
 DRYING PAD 2 & SLUDGE POND 2  
 SCALE: 1" = 30'

ELEVATION



SECTION B  
 SLUDGE POND 1 AND SLUDGE POND 2  
 HORIZONTAL SCALE: 1" = 60'  
 VERTICAL SCALE: 1" = 30'

DETAIL 1  
 EMERGENCY SPILLWAY AND OUTFALL  
 SCALE: 1" = 3'



REV	DATE	DESCRIPTION



MISSOURI BIOSOLIDS L.L.C.  
 2827 COUNTY ROAD 253  
 COLUMBIA, MO 65202

SECTIONS  
 A & B  
 AND  
 EMERGENCY  
 SPILLWAY DETAIL

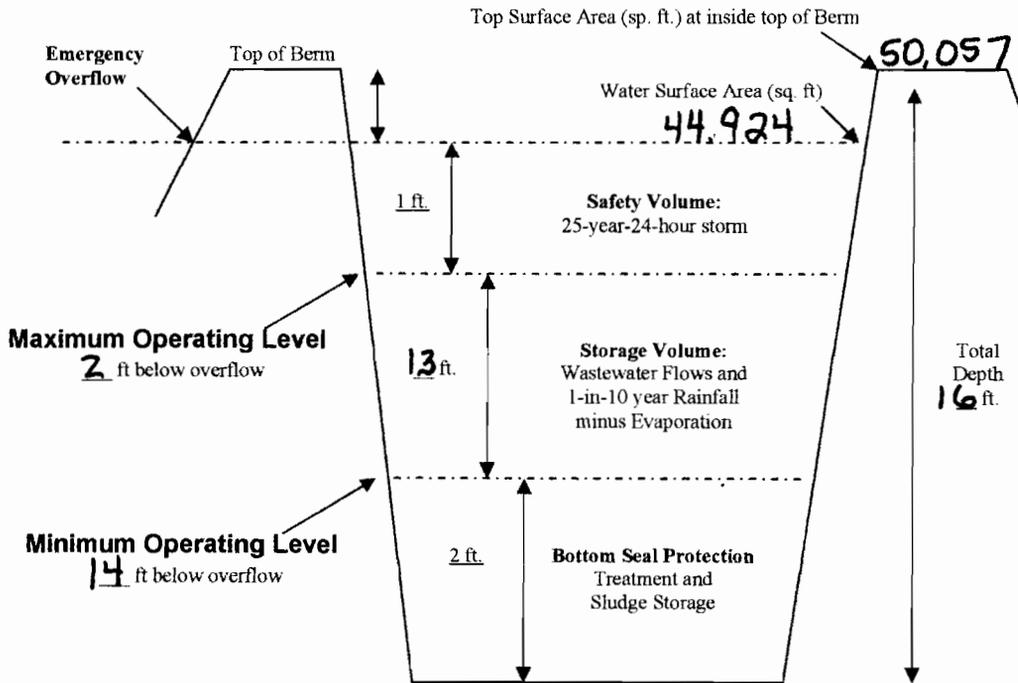
ENGINEER: LFY  
 DATE: 1/30/2014  
 DRAWN BY: KRN  
 CHECKED BY: LFY  
 DATE: 1/30/2014

PROJECT NO.  
**3958**  
 DRAWING NO.  
**2**  
 Rev. #      Date

**ATTACHMENT A**

(To be included with Form I and Form R)

**Lagoon or Storage Basin  
PROFILE SKETCH**



**DEFINITION OF TERMS (REFER TO THE PROFILE SKETCH ABOVE).**

- a. Freeboard is depth from top of berm to emergency spillway (minimum 1 foot);
- b. Safety Volume is depth for 25-year, 24-hour storm (minimum of 1 foot);
- c. Maximum Operating Level is at bottom of the safety volume (minimum of 2 feet below top of berm).
- d. Minimum Operating Level is 2 feet above bottom of lagoon for seal protection per 10 CSR 20-8.  
The minimum operating level may be greater than 2 feet when additional treatment volume is included.
- e. Storage Volume and days storage are based on the volume between Minimum and Maximum Operating Levels.
- f. Total Depth is from top of berm to bottom of basin including freeboard.

# **Geologic Investigation for Missouri Biosolids, LLC**

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January 31, 2014

## Table of Contents

Project Description	1
In-Situ Soil Liner Analysis	1
Appendix	
Boring Location Map	2
Boring Log	3
Permeability Test Sheets	4

## Project Description

The site of this investigation is located in the NE ¼ NE ¼ of Section 19, Township 49 North, Range 10 West, Callaway County, MO. The proposed action entails building a sludge pond with a soil liner. Samples were taken in July 2008 from an area adjacent to the lagoon site. Further sampling will be taken from constructed bottom of cell for as-built perms.

The soil investigation consisted of collecting in-situ soil, laboratory soils analysis, and data analysis.

## In Situ Soil Liner Analysis

Two permeability tests were completed for Missouri Biosolids, LLC. The soil is described as a brown clay (CL) changing to a gray clay (CL) at deeper depths. Shelby tube samples were collected in accordance with ASTM D-1587 from the two different colored clays and preserved in accordance with ASTM D-4220. Permeability testing methods followed ASTM D-5084.

The permeability coefficients yielded were:  $1.50 \times 10^{-7}$  cm/s from the brown clay at a sample depth below grade of 7.0 to 8.0 feet and  $2.31 \times 10^{-8}$  cm/s from the gray clay at a sample depth of 9.5 to 11.0 feet below grade. Because the bottom of the proposed lagoon extends to a depth of 12.4 feet below grade, the lower permeability of  $2.31 \times 10^{-8}$  cm/s was used to calculate the daily seepage rate. For more details, see the attached permeability test sheets.

Utilizing the permeability coefficient at 11.0 feet below grade, assuming a 14' water depth at freeboard and a 1' soil liner thickness, the seepage rate yielded is: 0.012 in/day. This seepage rate is less than the maximum allowable seepage rate of 0.02 in/day for a soil liner. This calculation is shown below.

$$S = (K \times (D+d)) / d$$

$$S = \text{Seepage Rate (in/day)}$$

$$K = \text{Permeability coefficient (in/day)} = 2.31 \times 10^{-8} \text{ cm/s} = 7.86 \times 10^{-4} \text{ in/day}$$

$$D = \text{Water depth of pond (ft)} = 14 \text{ ft}$$

$$d = \text{Liner thickness (ft)} = 1 \text{ ft}$$

$$S = (7.86 \times 10^{-4} \text{ in/day} \times (14\text{ft} + 1\text{ft})) / 1\text{ft} = 0.012 \text{ in/day}$$

The assumed soil liner thickness of 1' is based on the equation given in Missouri CSR 20-8.200(6)(C)1. This calculation is shown below.

$$t = (H \times K) / 5.4 \times 10^{-7} \text{ cm/s} = (H \times K) / 1.53 \times 10^{-3} \text{ ft/d}$$

$$t = \text{thickness of the soil seal}$$

$$H = \text{the head of water in the lagoon} = 14 \text{ ft}$$

$$K = \text{permeability coefficient of the soil in question} = 2.31 \times 10^{-8} \text{ cm/s} = 6.55 \times 10^{-5} \text{ ft/d}$$

$$t = (14 \text{ ft} \times 6.55 \times 10^{-5} \text{ ft/d}) / 1.53 \times 10^{-3} \text{ ft/d} = 0.60 \text{ ft} = 7.2 \text{ in}$$

A liner thickness of 1 foot is assumed due to the equation yielding a value less than 12 inches.

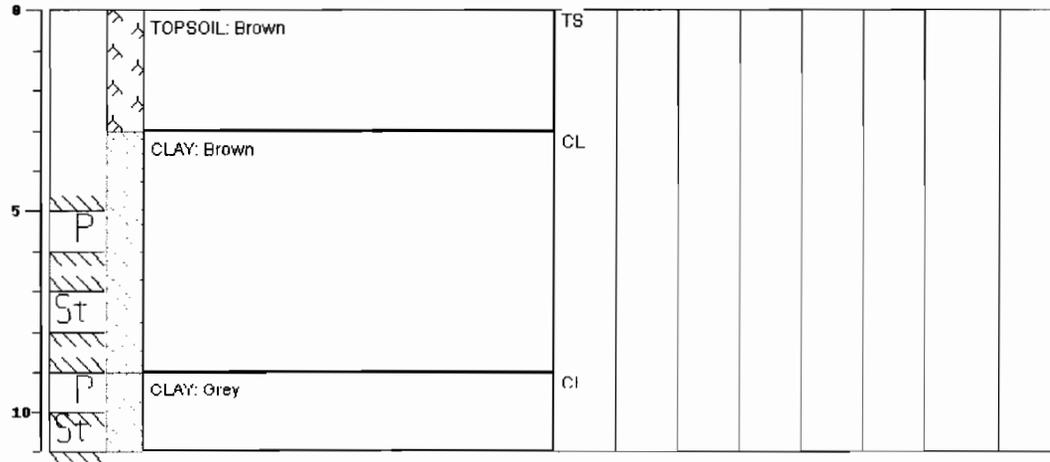




**Agricultural Engineering Associates** Phone: 620-756-1000  
1000 Promontory Dr., Uniontown KS 66779

Project Shryock Sludge Pond NE 1/4 NE 1/4 S19 T49N R10W Callaway County, MO	Date: 7/15/08	Drilling Information Backhoe	Hole No. 1
LL - Liquid Limit	PL - Plastic Limit	PI - Plastic Index	Elevation 899.7
Sv - Sieve	PE-Permeability(cm/sec)	M% - Percent Moisture	Water Level
GROUP SYMBOL: Cs=Composite St=Shelby Tube Gr=Grabs P=Proctor Sample			Water = $\infty$

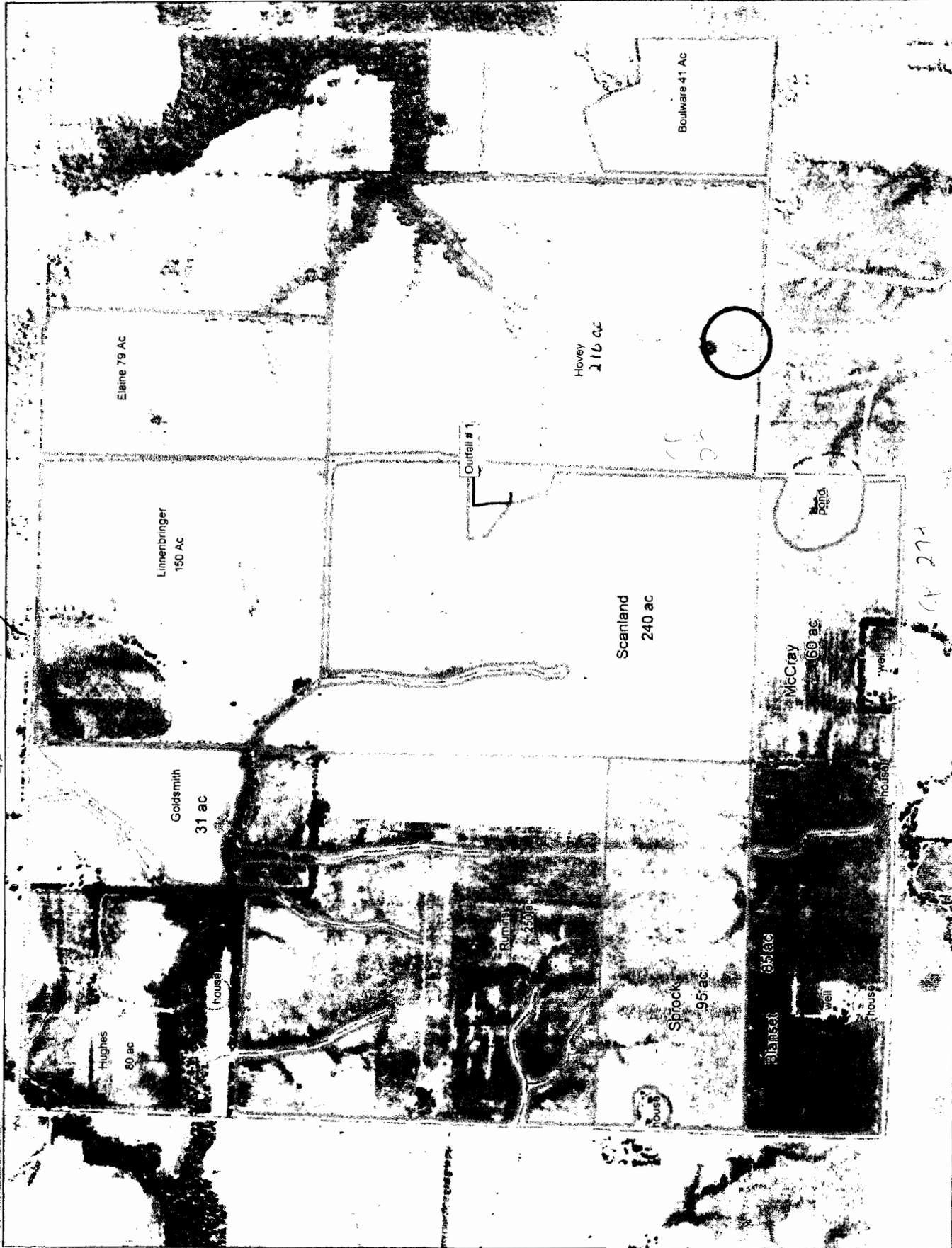
Depth	Group Symbol	Description of Material	USCS Class	Sample No.	LL	PL	PI	Sv	PE	M%
-------	--------------	-------------------------	------------	------------	----	----	----	----	----	----



<b>PERMEABILITY TEST REPORT</b>								
<b>PROJECT DATA</b>								
<b>PROJECT NAME:</b> Shryock				<b>SITE LOCATION</b>				
<b>PROJECT NO:</b> 3342				<b>LEGAL:</b> NE 1/4 NE 1/4 S 19 T 49N R 10W				
<b>OWNER:</b> Missouri Biosolids, LLC				<b>COUNTY:</b> Callaway		<b>STATE:</b> MO		
<b>SAMPLE DATA</b>								
Visual Description	brown clay			Percent Compaction	NA			
Sample Type	Shelby Tube			Liner Thickness	NA			
Sample Location	7' - 8' lagoon			Sampling Date				
<b>PERMEABILITY TEST SPECIMEN DATA</b>								
Specimen Parameters	Before Test	After Test	Specimen Parameters	Before Test	After Test	Note:		
Wt of compacted soil (g)	585.14	591.95	Specimen length (in)	2.84	2.84			
Tare can number	055	028	Specimen diameter (in)	2.86	2.85			
Wt of tare can (g)	55.05	54.35	Specimen volume (cm <sup>3</sup> )	298.97	296.88			
Wt of wet sample + TC (g)	278.02	231.21	Dry density (g/cm <sup>3</sup> )	1.58	1.60			
Wt of dry sample + TC (g)	235.61	196.56	Specific gravity (g/cm <sup>3</sup> )	2.68	2.68			
Wt of water (g)	42.41	34.65	Void ratio	0.691	0.679			
Wt. of dry sample (g)	180.56	142.21	Porosity (0-1.0)	0.409	0.404			
Water content (%)	23.49	24.37	Saturation (%)	91.11	96.15			
<b>FALLING HEAD PERMEABILITY TEST DATA</b>								
Elapse time (sec.)	Gauge Pressure (psi)			Hydraulic Gradient	Burette Reading (cc)		Test Temp. (°C)	Permeability K <sub>20</sub> (cm/sec)
	Cell	In (P <sub>i</sub> )	Out (P <sub>o</sub> )		In (V <sub>i</sub> )	Out (V <sub>o</sub> )		
0	75.1	70.2	68.1	20	23.2	1.9	20	//
14484	75.0	70.0	67.8	21	19.2	5.75	20	3.59e-07
66964	75.1	70.0	67.8	21	8.2	16.3	20	1.86e-07
77049	75.1	70.1	67.9	21	6.3	18.1	20	2.53e-08
91288	75.1	70.0	67.9	20	3.7	20.6	20	2.92e-08
Average	75.08	70.06	67.9	21			20	1.50e-07
Test Cell No.:		J		Start Test Date:		July 21, 2008		
Saturation Pressure (psi):				End Test Date:		July 22, 2008		
<b>PERMEABILITY, DENSITY AND MOISTURE PARAMETERS</b>								
K <sub>20</sub> (cm/sec.)	K <sub>20</sub> (in/day)		Dry Density (lbs/ft <sup>3</sup> )		Moisture Content (dry wt. Basis)(%)			
1.50e-07	5.09e-03		98.95		23.49			
<b>Agricultural Engineering Associates</b> 1000 Promontory Drive, P O Box 4 Uniontown, KS 66779 Phone: (620) 756-1000 Fax: (620) 756-4600				Tested By:	Kara Niemeir			
				Checked By:				
				Test Date:	7/22/08			
				File No.:				

<b>PERMEABILITY TEST REPORT</b>								
<b>PROJECT DATA</b>								
<b>PROJECT NAME:</b> Shryock				<b>SITE LOCATION</b>				
<b>PROJECT NO:</b> 3342				<b>LEGAL:</b> NE 1/4 NE 1/4 S19 T49N R10W				
<b>OWNER:</b> Missouri Biosolids, LLC				<b>COUNTY:</b> Callaway		<b>STATE:</b> MO		
<b>SAMPLE DATA</b>								
Visual Description	grey clay			Percent Compaction	NA			
Sample Type	Shelby Tube			Liner Thickness	NA			
Sample Location	9.5'-11' lagoon			Sampling Date	NA			
<b>PERMEABILITY TEST SPECIMEN DATA</b>								
Specimen Parameters	Before Test	After Test	Specimen Parameters	Before Test	After Test	Note:		
Wt of compacted soil (g)	746.17	755.24	Specimen length (in)	3.46	3.45			
Tare can number	055	019	Specimen diameter (in)	2.87	2.88			
Wt of tare can (g)	55.06	54.33	Specimen volume (cm <sup>3</sup> )	365.09	368.39			
Wt of wet sample + TC (g)	149.63	265.83	Dry density (g/cm <sup>3</sup> )	1.68	1.67			
Wt of dry sample + TC (g)	132.96	228.14	Specific gravity (g/cm <sup>3</sup> )	2.68	2.68			
Wt of water (g)	16.67	37.69	Void ratio	0.592	0.606			
Wt. of dry sample (g)	77.90	173.81	Porosity (0-1.0)	0.372	0.377			
Water content (%)	21.40	21.68	Saturation (%)	96.89	95.86			
<b>FALLING HEAD PERMEABILITY TEST DATA</b>								
Elapse time (sec.)	Gauge Pressure (psi)			Hydraulic Gradient	Burette Reading (cc)		Test Temp. (°C)	Permeability K <sub>20</sub> (cm/sec)
	Cell	In (P <sub>i</sub> )	Out (P <sub>o</sub> )		In (V <sub>i</sub> )	Out (V <sub>o</sub> )		
0	75.1	70.1	68.0	17	23.2	0.9	20	
36610	75.1	70.1	68.0	17	23.0	1.0	20	7.05e-09
36610	75.0	69.9	67.7	18	19.0	1.2	20	9.41e-08
36610	75.1	70.0	67.7	18	18.8	1.35	20	7.30e-09
36610	74.9	69.9	67.6	18	18.7	1.5	20	5.07e-09
36610	74.9	69.7	67.5	18	18.9	1.8	20	2.08e-09
Average	75.04	70	67.8	18			20	2.31e-08
Test Cell No.:		A		Start Test Date:		July 29, 2008		
Saturation Pressure (psi):				End Test Date:		August 11, 2008		
<b>PERMEABILITY, DENSITY AND MOISTURE PARAMETERS</b>								
K <sub>20</sub> (cm/sec.)	K <sub>20</sub> (in/day)	Dry Density (lbs/ft <sup>3</sup> )		Moisture Content (dry wt. Basis)(%)				
2.31e-08	7.85e-04	105.10		21.40				
<b>Agricultural Engineering Associates</b> 1000 Promontory Drive, P O Box 4 Uniontown, KS 66779 Phone: (620) 756-1000 Fax: (620) 756-4600				Tested By:		Kara Niemeir		
				Checked By:				
				Test Date:		7/28/08		
				File No.:				

Missouri Biosolids Facility



TN  
NAD 83 (11E)



Missouri Department Of Natural Resources

Division of Geology and Land Survey
P.O. Box 250
Rolla, Missouri 65402-0250
Phone - 573.368.2161 Fax - 573.368.2111
E-mail - gspgeol@dnr.mo.gov

Project ID Number

LWE14053

County

CALLAWAY

Geohydrologic Evaluation of Liquid-Waste Treatment Site

Project Missouri Biosolids, LLC Quadrangle HATTON
Location NE1/4,SE1/4,NE1/4 Section 19 Township 49 N Range 10 W
Additional Location Information
Latitude 39 Deg 0 Min 55 Sec Longitude 92 Deg 4 Min 20 Sec

Owner Missouri Biosolids, LLC (573) 219-6583
2927 County Rd 253 Columbia MO 65202

Requestor Missouri Biosolids, LLC (573) 219-6583
2927 County Rd 253 Columbia MO 65202



1-27-2014

Previous Report Not Applicable
Date 05/02/2007
Identification Number 21907
Fiscal Year 14

Facility Type

- Mechanical treatment plant
Recirculating filter bed
Earthen lagoon with discharge
Earthen holding basin
Land application
Other type of facility

Type of Waste

- Animal
Human
Process or industrial
Leachate
Other waste type

Funding Source

- PPG
WWLF-SRF
Non-Point Source

Other Information

- Plans were submitted
Site was investigated by NRCS
Soil or geotechnical data were submitted

Date of Field Visit 01/14/2014

Stream Classification Gaining Losing No discharge

Overall Geologic Limitations

- Slight
Moderate
Severe

Collapse Potential

- Not applicable
Slight
Moderate
Severe

Topography

- < 4%
4% to 8%
8% to 15%
> 15%

Landscape Position

- Broad uplands
Floodplain
Ridgetop
Alluvial plain
Hillslope
Terrace
Narrow ravine
Sinkhole

Bedrock The uppermost bedrock at the site is low permeability, Pennsylvanian-age Cherokee and Marmaton Groups consisting of limestones, shales and sandstones.

Surficial Materials Surficial materials consist of approximately 50 feet of low to moderately permeable clayey glacial drift overlain by approximately 10 feet of low to moderately permeable silty-clay loess.

**Recommended Construction Procedures**

- Installation of clay pad
- Diversion of subsurface flow
- Rock excavation
- Compaction
- Artificial sealing
- Limit excavation depth

**Required Geologic Exploration**

(Missouri Clean Water Commission - 10 CSR 20 - 8.200 Wastewater Treatment Ponds)

**Determine Overburden Properties**

- Particle size analysis
- Standard Proctor density
- Permeability coefficient for undisturbed sample
- Atterburg limits
- Overburden thickness
- Permeability coefficient for remolded sample

**Determine Hydrologic Conditions**

- Groundwater elevation
- Direction of groundwater flow
- 25-year flood level
- 100-year flood level

**Notify Geologist**

- Before exploration
- During construction
- After construction
- Not necessary

**Remarks**

On January 14, 2014, a geohydrologic evaluation was conducted by the Missouri Geological Survey (MGS) for a proposed earthen holding basin and a 1,327 acre land application area for Missouri Biosolids, LLC in Callaway County, MO. This site had previously been evaluated in May of 2007 for an approximately 600 acre land application area and earthen storage basin.

The existing earthen holding basin is located west of and adjacent to County Road 285 approximately 2.5 miles southwest of Hatton, MO. The proposed earthen holding basin is located south of and adjacent to the existing earthen holding basin. The proposed land application area is south of and adjacent to MO Hwy E, bounded by County Road 274 to the south, MO Hwy P to the west and County Road 283 to the east. The existing earthen holding basin appears to be holding with no leaks in the berms observed.

No bedrock was observed onsite. However, a review of geologic maps, the previous May 2007 Geohydrologic Evaluation report of the site, and surficial materials observed indicate the uppermost bedrock as low permeability Pennsylvanian-age Cherokee and Marmaton Groups consisting of limestones, shales and sandstones. Surficial materials consist of approximately 55 feet of low to moderately permeable clayey glacial drift overlain by approximately 10 feet of low to moderately permeable silty-clay loess.

Any runoff from the western half of the proposed land application area will migrate west into one of several tributaries of Renfro Creek. Any runoff from the eastern half of the proposed land application area will migrate south into one of several tributaries of Fourmile Branch or Auxvasse Lick Branch. The site is in a gaining setting.

There are no known sinkholes, springs, losing streams, geologic structures or underground mines within 5.0 miles of the site. There are several private water wells and residential structures within the proposed land application area. The nearest public water supply well is located approximately 1.0 mile north of the site.

If the systems proposed were to function improperly, local groundwater could be adversely impacted as well as the surface waters of the unnamed tributaries of Renfro Creek, Renfro Creek, the unnamed tributaries of Fourmile Branch, Fourmile Branch, the unnamed tributaries of Auxvasse Lick Branch and Auxvasse Lick Branch.

There appears to be sufficient clay-rich materials on-site for adequate holding basin construction. However, coarser materials (sand, gravel, cobbles, etc.) may need to be separated from the clay rich materials, or over-excavation of any sandy or gravelly lenses encountered is highly recommended.

Based on geologic and hydrologic characteristics observed, the site receives a slight geologic limitations rating and a slight collapse potential rating.

To ensure the effectiveness of a wastewater treatment system which relies on land application and natural soils as a part of the wastewater treatment process, a performance monitoring requirement may be implemented. This requirement may include the design and implementation of a groundwater monitoring program and/or an engineered nutrient management plan which demonstrates compliance with the department's treatment standards. Please contact the MDNR Water Protection Program at 573-751-1300 for further information, or the local MDNR regional office. The location, phone number and address of the departments regional offices can be found on the departments web site at <http://www.dnr.mo.gov/regions/regions.htm>.

This document is a preliminary report. It is not a permit. Additional data may be required by the Department of Natural Resources prior to the issuance of a permit. This report is valid only at the above location and becomes invalid one year after the report date below.

2/1/2014

## **Operation & Maintenance Plan**

We are currently receiving biosolids from Columbia WWTF and several other smaller WWTF in our area, as well as industrial biosolids from Teva Pharmaceuticals, Tyson foods, Triumph foods, Unilever & Darling as well as septage from local haulers. The biosolids are hauled in tanker trucks and dumped into our DNR permitted facility for temporary storage. While in storage the biosolids are mixed and tested in accordance with the 503 regulations. When field conditions are right the biosolids are land applied. We feel subsurface injection is the best method of land application, it minimizes odor and more importantly reduces the risk of nutrient loss. We subsurface apply the biosolids at agronomic rates based on our Nutrient Management Plan, Biosolids and Soil test results. This saves us the fertilizer value and provides local treatment plants with a safe and reliable way of biosolids disposal.

### **Biosolids Liquid Receiving**

The tractor trailer trucks full of biosolids will pull into the drive located to the north of the lagoon and stop with the discharge valve on the tanker in close proximity to the dump station. The roadway is slightly higher under the tires on the tractor which allows for the tanker to have a downward slope to the rear discharge point on the tanker this allows for faster cleanout of the trucks. The driver will attach a 6" hose to the discharge port on the tanker. The other end of the hose is attached to the intake side of the bar screen at the dump station. After ensuring that he has a good connection with the hose the driver will open the valve and dump the biosolids from the truck. The said biosolids will run into the dump pit and be filtered thru the bar screen. Once the biosolids are filtered they are discharged from the dump station and flow down the concrete ramp into the lagoon. After the truck is completely empty the driver will close the valve on the tanker and disconnect the hose from the discharge point. The driver will then ensure that the hose contains no biosolids by lifting the open end higher than the pit end to drain the biosolids from the hose. Before the driver leaves he will take a rake and clean the bar screen of debris, putting screenings into a dumpster to be hauled to the landfill.

### **Biosolids Dry Receiving**

The tractor trailer trucks full of biosolids will pull into the drive located to the north of the lagoon and stop in a place where they can back onto the dry storage pad. They will then back their trucks onto the pad and dump the load in a pile. Once their truck is empty the drivers will check to ensure that all biosolids are removed from the tires on the truck and anywhere else on the truck before leaving the site.

## Storage of Biosolids

Storage of the biosolids will consist of daily checks of the facility to ensure that no biosolids are in danger of being discharged from the facility. The entire facility will be checked visually and anything that looks abnormal will be address on a case by case basis.

## Nutrient Management Plan

12/01/10

Prior to land application, the soil is tested for nutrient levels. The sludge is also tested for several things including Nitrogen and Phosphorus. These levels are constantly changing. This is an EXAMPLE of the sludge analyses and the rate applied.

Previous Crop: Soybeans  
Proposed Crop: Corn

sludge = 3.4% solids

$$\frac{2000 \text{ lb}}{3.4} = 588.23 \times 100 = 58,823 \text{ lbs sludge} = 1 \text{ dry ton}$$

**Nitrogen:** 62 LBS PAN/ton dry material

Corn yield goal = 200 bu/acre  
Crop needs 186 lbs/acre PAN to produce goal.  
Apply 3 dry ton of sludge/acre.

$$3 \text{ dry ton} = 176,470 \text{ lbs sludge}$$
$$\frac{176,470}{8.34 \text{ lbs/gal}} = 21,159 \text{ gal/acre to deliver nitrogen requirement}$$

$$\frac{2,295,013 \text{ gallons}}{21,159 \text{ gal/acre}} = 108.46 \text{ acres needed to empty basin.}$$

**Phosphorous:** Do not apply biosolids to soil that contains more than 800 lbs/acre of available phosphorus.

$$55 \text{ lbs P1/ton dry material}$$
$$55 \times 2.27 = 124.85 \text{ lbs P205/ton}$$
$$124.85 \times 3 \text{ ton/acre} = 374.55 \text{ lbs P205/acre}$$

200 bu Corn requires 86 lbs P205  
No additional P205 is needed

With the number of acres available, I expect each field will receive biosolids every third to fourth year.

## **Land Application of Liquid Biosolids**

The equipment will include:

- Several Farm Tractors
- Four Lagoon Pumps
- Four High Pressure Pump
- Two Miles of Manure Drag Line Hose with reel
- Two Farm Star Sludge Injection Toolbar with Flow Meter
- Farm Tractor Equipped with GPS to pull tool bar.
- Mudcat dredge with floating hose
- Honey wagon w/toolbar
- Industrial Air Compressor

The lagoon will be mixed with lagoon pump agitators to ensure that the biosolids are as consistent as possible. The pumps are about 50ft long and are powered by farm tractors. One of the pumps is a houle lagoon pump and serves two purposes. Once the lagoon is mixed, a hose is attached to the discharge port on the houle pump and connected to the intake side of the high pressure pump. The high pressure pump feeds the sludge thru the manure drag line hose. The manure drag line hose is attached to the farm star injection toolbar. The toolbar is pulled back and forth by a farm tractor applying the biosolids at agronomic rates. When applying the biosolids it takes three men. One is at the lagoon, operating the pumps, a second man is on a four wheeler monitoring the manure drag line hose, and the third man is operating the tractor and toolbar. The man on the four wheeler samples the biosolids every hour for % solids. Using this information, as well as the analytical nutrient data the operator of the tractor and tool bar can accurately apply the biosolids. Once land application is complete, the hose is disconnected from the riser. A foam pig is inserted into the manure dragline hose and is blown thru the line with a high volume air compressor. By doing this it pushes the remaining biosolids that are still in the line through tool bar continuing subsurface injection until all sludge is removed from hoses. After the hose is clean it is spooled up on the hose reel. Using the umbilical hose system is a safe and efficient way of biosolids land application.

## **Land Application of Dry Biosolids**

The equipment will include:

Front End Loader  
Two Knight Pro Twin Manure Spreader  
Disk  
Farm Tractor Equipped with GPS to pull spreader  
Farm tractor to pull Disk

Using the front end loader the biosolids will be transferred from the dry storage pad to the Knight spreader. The operator will spread the biosolids at agronomic rates based on our nutrient management plan.

## **Biosolids Sample Collection and Testing**

### **% Solids:**

Percent solids should be tested as often as possible. Take a clean bottle and collect a sample at the wet well. Use the IR-35 solids tester that is owned by Missouri Biosolids to test a two gram sample of the sludge. Record the result along with the Date and Time, and the field ID on the % solids sheet. This should be done once per hour, but twice a day at a minimum.

### **PAN Testing:**

Plant Available Nitrogen should be tested Once for every 100 Dry tons of Biosolids that are land applied. Or any time that you feel the level of N in the sludge might have changed. The sample should be taking at the wet well in a clean bottle and delivered straight to a lab for analysis.

### **503 Testing**

The Biosolids should be tested quarterly when land application occurs. A sample should be taken at the wet well in clean bottles and delivered to the Lab for testing.

### **Industrial Sludge Testing**

The sludge should be tested quarterly according to the permit.

Sampling for the north lagoon needs be done quarterly (if land applying) and taken while land application is in progress.

## **Land Application Equipment**

Land application equipment should be visually inspected daily. It should be run thru the shop once per month to be serviced and repaired. If at anytime during land application a machine is found to have a problem that could effect the quality of

land application of the Biosolids the machine should be shut down and taken out of service until the repairs can be completed. A shop repair invoice should be completed for each machine that gets worked on stating the problem and the parts needed to correct the problem. A copy of the repair invoice should be put in the O & M Manual.

## **Lagoon Structure and Land Application Pipelines**

The Lagoons should be checked daily. Included on this manual is a Lagoon Checklist, as well as a Bar Screen Checklist with are good references to use when checking lagoons. The Irrigation pipelines should be checked daily during land application. If any leaks are detected land application should stop until the problem is fixed. If a line repair is needed it should be recorded with GPS and included in the operations manual.

## **Insuring Separation Distances**

A list of the required separation distances is taped up on the window inside the sludge application tractor. The tractor also has a GPS unit with the field boundaries and the legal sludge boundaries installed on it. Each time a new field is used to land apply biosolids, the separation distances should be reviewed. It is also a good idea to walk the field to insure that the buffer zones are accurate and maintained.

## **Employee Training**

At a minimum of once per year we will have an employee training day. This will include everything mentioned in the operations and O&M manual, as well as a facility walk around. Each time a new employee is hired they will be given training before they are allowed to work with the Biosolids.

## **Procedure to avoid application if there is a weather forecast for significant precipitation within 24 hours.**

Each morning that land application is expected, the weather forecast will be monitored to ensure that a large rainfall event is not coming. If a large rain is forecasted land application will stop.

## **Number of Days suitable for field work**

According to the University of Missouri's 29 year data. There is 171 days average suitable for field work in Central Missouri. We use the drag hose system to land apply our biosolids. We can pump 1,000 gallons per minute and we generally work about 12 hrs per

day when daylight permits. We can land apply all the biosolids that we receive in about 30 days. We have 7 employees.

## **Approved Antibiotic Testing Methods**

Samples our pulled quarterly from the lagoon that is receiving sludge from Teva Pharmaceuticals. The samples our collected in a clean bottle and taken to Teva for testing of Antibiotic residuals according to our permit.

## **List of approved industry groups**

2000 Food and Kindred Products  
283 Drugs

## **Specific Industries Contact Information**

Teva Pharmaceuticals  
Andy Fecht 573-582-6221

Dawn Foods  
John Wirts 573-230-8906

Coca Cola  
Louis White 314-985-9937

Cargill Turkey Products  
660-458-6537

Conagra Foods  
660-359-3913

Nestle Purina Pet Care  
314-982-1000

Triumph Foods  
816-396-2700

Tyson Foods  
660-826-9991



# Water Analysis

Date: 16-Apr-13

To: Loren Hunt  
 cc: T. Faulk E. Seals S. Bookout C. Garrick J. Faller  
 Location: **Unilever / Jefferson City, MO**

Sample	Sample Description	Sample	Sample Description
1088	Sludge Sample		

Test Description	Sample Number							
	1088							
pH (pH Units)	7.04							
Total Solids (% weight)	5.76							
Volatile Solids (% weight)	65.98							
Ammonia Nitrogen	22.34							
Nitrate / Nitrite as Nitrogen	< 0.0625							
TKN	42297							
Phosphorus (P)	< 0.05							
Oil & Grease - HEM	1000.0							
Arsenic (As)	< 0.25							
Cadmium (Cd)	< 0.25							
Chromium (Cr)	< 0.25							
Copper (Cu)	1.87							
Lead (Pb)	< 0.25							
Molybdenum (Mo)	2.46							
Nickel (Ni)	< 0.25							
Report Prepared by: Technical Department	<b>Results are expressed as ppm unless otherwise indicated</b>							

Report Prepared by: *Keith [Signature]*

Approved by: *[Signature]*

The foregoing laboratory report is intended solely as the report of the results of the analytical laboratory procedures undertaken pursuant to the request for the laboratory work received. It is our intent to report the factual results and conclusions only. And no recommendation for action is intended or should be inferred. Our analysis warrants only that this report accurately reflects no other warranty or representation of any kind, express or implied concerning this report or the contents hereof, and no such warranty shall be implied by law.



# Water Analysis

Date: 16-Apr-13

To: Loren Hunt  
 cc: T. Faulk E. Seals S. Bookout C. Garrick J. Faller  
 Location: Unilever / Jefferson City, MO

Sample	Sample Description	Sample	Sample Description
1088	Sludge Sample		

Test Description	Sample Number						
	1088						
Potassium (K)	128						
Selenium (Se)	< 0.25						
Mercury (Hg)	< 0.0008						
Zinc (Zn)	50.16						
Sodium (Na)	1615						
<b>TCLP Metals</b>							
TCLP Arsenic (As)	< 0.5						
TCLP Barium (Ba)	< 5						
TCLP Cadmium (Cd)	< 0.1						
TCLP Chromium (Cr)	< 0.5						
TCLP Selenium (Se)	< 0.1						
TCLP Silver (Ag)	< 0.5						
TCLP Mercury (Hg)	< 0.002						
<b>TCLP Herbicides</b>							
2,4,5-TP (Silvex)	< 0.5						
2,4-D	< 0.5						
Report Prepared by: Technical Department <span style="float: right;">Results are expressed as ppm unless otherwise indicated</span>							

Report Prepared by: *Keith [Signature]*

Approved by: *[Signature]*

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# Water Analysis

Date: 16-Apr-13

To: Loren Hunt  
 cc: T. Faulk E. Seals S. Bookout C. Garrick J. Faller  
 Location: **Unilever / Jefferson City, MO**

Sample	Sample Description	Sample	Sample Description
1088	Sludge Sample		

Test Description	Sample Number						
	1088						
TCLP Pesticides							
Chlordane	< 0.01						
Endrin	< 0.01						
Heptachlor	< 0.005						
Heptachlor Epoxide	< 0.005						
Lindane	< 0.1						
Methoxychlor	< 1						
Toxaphene	< 0.1						
TCLP Semi-Volatiles							
2,4,5-Trichlorophenol	< 1						
2,4,6-Trichlorophenol	< 1						
2,4-Dinitrotoluene	< 0.05						
Hexachloro-1,3-Butadiene	< 0.1						
Hexachlorobenzene	< 0.05						
Hexachloroethane	< 0.5						
Report Prepared by: Technical Department	<b>Results are expressed as ppm unless otherwise indicated</b>						

Report Prepared by: *Keith Duffin*

Approved by: *[Signature]*

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Date: 16-Apr-13

To: Loren Hunt  
 cc: T. Faulk E. Seals S. Bookout C. Garrick J. Faller  
 Location: **Unilever / Jefferson City, MO**

Sample	Sample Description	Sample	Sample Description
1088	Sludge Sample		

Test Description	Sample Number						
	1088						
TCLP Semi-Volatiles							
m-Cresol	< 1						
Nitrobenzene	< 1						
o-Cresol	< 1						
p-Cresol	< 1						
Pentachlorophenol	< 1						
Pyridine	< 2.5						
Total Cresols	< 1						
TCLP Volatiles							
1,1-Dichloroethylene	< 0.1						
1,2-Dichloroethane	< 0.1						
1,4-Dichlorobenzene	< 1						
Benzene	< 0.1						
Carbon Tetrachloride	< 0.1						
Chlorobenzene	< 10						
Report Prepared by: Technical Department	<b>Results are expressed as ppm unless otherwise indicated</b>						

Report Prepared by: *Keith DeFuria*

Approved by: *[Signature]*

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# Water Analysis

Date: 16-Apr-13

To: Loren Hunt  
 cc: T. Faulk E. Seals S. Bookout C. Garrick J. Faller  
 Location: **Unilever / Jefferson City, MO**

Sample	Sample Description	Sample	Sample Description
1088	Sludge Sample		

Test Description	Sample Number							
	1088							
TCLP Volatiles								
Chloroform	< 1							
Methyl Ethyl Ketone	< 20							
Tetrachloroethylene	< 0.1							
Trichloroethylene	< 0.1							
Vinyl Chloride	< 0.1							
Report Prepared by: Technical Department	Results are expressed as ppm unless otherwise indicated							

Report Prepared by: *Keith Duffie*

Approved by: *[Signature]*

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