STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

CONSTRUCTION PERMIT

The Missouri Department of Natural Resources hereby issues a permit to:

WASHINGTON AD 1, LLC
Kim Martin, VP of Development
1740 Bieker Rd,
Washington, Missouri 63090

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (department).

As the department does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.

A representative of the department may inspect the work covered by this permit during construction. Issuance of a permit to operate by the department will be contingent on the work substantially adhering to the approved plans and specifications.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

May 16, 2025
Effective Date

May 15, 2027
Expiration Date

John Hoke, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Construction of a covered digestate storage basin, which will store process wastewater prior to land application. The digestate storage basin includes a loadout station to pump digestate into land application vehicles and receives flow from the proposed anaerobic digester facility through an approximately 2,000 lf (linear feet) four-inch force main transfer line. The storage basin will have a rainwater collection system to remove rainwater from the cover.

This project will also include general site work appropriate to the scope and purpose of the project and all necessary appurtenances to make a complete and usable wastewater treatment facility.

II. COST ANALYSIS FOR COMPLIANCE

Pursuant to Section 644.145, RSMo, when issuing permits under this chapter that incorporate a new requirement for discharges from publicly owned combined or separate sanitary or storm sewer systems or publicly owned treatment works, or when enforcing provisions of this chapter or the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., pertaining to any portion of a publicly owned combined or separate sanitary or storm sewer system or [publicly owned] treatment works, the Department of Natural Resources shall make a "finding of affordability" on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the Federal Water Pollution Control Act. This process is completed through a cost analysis for compliance. Permits that do not include new requirements may be deemed affordable.

The department is not required to determine Cost Analysis for Compliance because the permit contains no new conditions or requirements that convey a new cost to the facility.

III. CONSTRUCTION PERMIT CONDITIONS

The permittee is authorized to construct subject to the following conditions:

1. This construction permit does not authorize discharge.

2. All construction shall be consistent with plans and specifications signed and sealed by Daniel L. Dehann, P.E. with Dehaan, Grabs & Associates, LLC, and as described in this permit.

3. The department must be contacted in writing prior to making any changes to the plans and specifications that would directly or indirectly have an impact on the capacity, flow, system layout, or reliability of the proposed wastewater treatment facilities or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(11). State and federal law does not permit bypassing of raw wastewater; therefore, steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the department's St. Louis Regional Office per 10 CSR 20-7.015(9)(G).

4. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of one acre or more to obtain a Missouri state operating permit to discharge stormwater. The permit requires best management practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the department's ePermitting system available online at https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem. See https://dnr.mo.gov/data-e-services/water/electronic-permitting-epermitting for more information.

5. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.

   - Flood protection shall apply to new construction and to existing facilities undergoing major modification. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than 100-year flood elevation. 10 CSR 20-8.140(2)(B)

   - Unless another distance is determined by the Missouri Geological Survey or by the department's Public Drinking Water Branch, the minimum distance between wastewater treatment facilities and all potable water sources shall be at least 300 feet. 10 CSR 20-8.140(2)(C)1.

   - Facilities shall be readily accessible by authorized personnel from a public right–of-way at all times. 10 CSR 20-8.140(2)(D)

   - All wastewater treatment facilities shall be provided with an alternate source of electric power or pumping capability to allow continuity of operation during power failures. 10 CSR 20-8.140(7)(A)1.

   - Electrical systems and components in raw wastewater or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors that are normally present, shall comply with the NFPA 70 *National Electric Code (NEC)* (2017 Edition), as approved and published August 24, 2016, requirements for Class I, Division 1, Group D locations. 10 CSR 20-8.140(7)(B)

   - No piping or other connections shall exist in any part of the wastewater treatment facility that might cause the contamination of a potable water supply. 10 CSR 20-8.140(7)(D)1.

   - Adequate provisions shall be made to effectively protect facility personnel and visitors from hazards. The following shall be provided to fulfill the particular needs of each wastewater treatment facility:
     - Fencing. Enclose the facility site with a fence designed to discourage the entrance of unauthorized persons and animals; 10 CSR 20-8.140 (8) (A)
     - Gratings over appropriate areas of treatment units where access for maintenance is necessary; 10 CSR 20-8.140(8)(B)
     - First aid equipment; 10 CSR 20-8.140(8)(C)
     - Posted "No Smoking" signs in hazardous areas; 10 CSR 20-8.140(8)(D)
     - Appropriate personal protective equipment (PPE); 10 CSR 20-8.140(8)(E)

- Portable blower and hose sufficient to ventilate accessed confined spaces; 10 CSR 20-8.140(8)(F)
- 10 CSR 20-8.140(8)(G) Portable lighting equipment complying with NEC requirements. See subsection (7)(B) of this rule;
- 10 CSR 20-8.140(8)(H) Gas detectors listed and labeled for use in NEC Class I, Division 1, Group D locations. See subsection (7)(B) of this rule;
- Appropriately-placed warning signs for slippery areas, non-potable water fixtures (see subparagraph (7)(D)3.B. of this rule), low head clearance areas, open service manholes, hazardous chemical storage areas, flammable fuel storage areas, high noise areas, etc.; 10 CSR 20-8.140(8)(I)
- Explosion-proof electrical equipment, non-sparking tools, gas detectors, and similar devices, in work areas where hazardous conditions may exist, such as digester vaults and other locations where potentially explosive atmospheres of flammable gas or vapor with air may accumulate. 10 CSR 20-8.140(8)(K)
- Provisions for local lockout/tagout on stop motor controls and other devices; 10 CSR 20-8.140(8)(L)
- Provisions for an arc flash hazard analysis and determination of the flash protection boundary distance and type of PPE to reduce exposure to major electrical hazards shall be in accordance with NFPA 70E *Standard for Electrical Safety in the Workplace* (2018 Edition), as approved and published August 21, 2017. 10 CSR 20-8.140(8)(M)

- Treatment prior to surface irrigation shall provide performance equivalent to that obtained from a primary wastewater lagoon cell designed and constructed in accordance with 10 CSR 20-8.200(4), except that the lagoon depth may be increased to include wastewater storage in addition to the primary volume. 10 CSR 20-8.200(4)(B).

- Lagoon berms shall be constructed of relatively impervious material and compacted to at least 95 percent maximum dry density test method to form a stable structure. 10 CSR 20-8.200(5)(A)1.

- The minimum berm width shall be eight feet to permit access of maintenance vehicles. 10 CSR 20-8.200(5)(A)2.

- Minimum freeboard shall be two feet. 10 CSR 20-8.200(5)(A)3.

- An emergency spillway shall be provided that—
  - Prevents the overtopping and cutting of berms; 10 CSR 20-8.200(5)(A)4.A.
  - Is compacted and vegetated or otherwise constructed to prevent erosion; 10 CSR 20-8.200(5)(A)4.B. and
  - Has the ability for a representative sample to be collected, if discharging. 10 CSR 20-8.200(5)(A)4.C.

- The soil of the lagoon bottom shall be compacted with the moisture content between 2 percent below and 4 percent above the optimum water content and compacted to at least 95 percent maximum dry density test method. 10 CSR 20-8.200(5)(B)

- The lagoon shall be sealed to ensure that seepage loss is as low as possible and has a design permeability not exceeding 1.0 x 10-7 cm/sec. 10 CSR 20-8.200(5)(C)1.

- The minimum thickness of the compacted clay liner must be 12 inches. For permeability coefficients greater than 1.0 × 10-7 cm/sec or for heads over 5 fee
such as an aerated lagoon system, the following formula shall be used to determine minimum seal thickness, Equation 200-1 per 10 CSR 20-8.200(5)(C)2.:

  Equation 200-1

$$t = \frac{H \times K}{5.4 \times 10^{-7\ \text{cm/sec}}}$$

  where:
  K = the permeability coefficient of the soil in question;
  H = the head of water in the lagoon; and
  t = the thickness of the soil seal.

- Seep collars shall be provided on drainpipes where they pass through the lagoon seal. 10 CSR 20-8.200(5)(C)4.

- Unlined corrugated metal pipe shall not be used for influent lines due to corrosion problems. 10 CSR 20-8.200(5)(D)1.

- The influent line(s) shall be located along the bottom of the lagoon so that the top of the pipe is just below the average elevation of the lagoon seal; however, there shall be an adequate seal below the pipe. 10 CSR 20-8.200(5)(D)3.

- Lagoon covers shall be constructed with a minimum thickness of 2 mil or meet the manufacturer's recommendations and be ultraviolet and weather resistant. 10 CSR 20-8.200(6)(A)

- The lagoon cover shall include a stormwater removal system that conveys collected precipitation to sumps or includes drainage areas in the membrane within the acceptable leakage rate to allow stormwater to drain into the lagoon. 10 CSR 20-8.200(6)(C)

- At a minimum, treatment prior to irrigation shall provide performance equivalent to that obtained from a primary wastewater lagoon cell and include 90 days wastewater storage in addition to the primary volume. 10 CSR 20-8.200(7)(C)

6. Upon completion of construction:

   A. WASHINGTON AD 1, LLC, will become the continuing authority for operation and maintenance of these facilities;

   B. Submit an electronic copy of the as-built engineering plans if the project was not constructed in accordance with previously submitted plans and specifications; and

   C. Submit the Statement of Work Completed form to the department in accordance with 10 CSR 20-6.010(5)(N) (https://dnr.mo.gov/document-search/wastewater-construction-statement-work-completed-mo-780-2155)

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The purpose of construction is to provide at a minimum 90 days of process wastewater storage as required 10 CSR 20-8.200(7)(C). The proposed storage basin will provide approximately 280 days of storage at a daily average design flow of 75,000 gallons per day (gpd).

2. FACILITY DESCRIPTION

This is a new industrial anaerobic digester facility proposed by Washington AD 1, LLC. The proposed facility will receive feedstock consisting of organic food waste (OFW) materials and livestock manure from the Riegel Dairy Farm. The feedstock will be anaerobically digested in order to capture renewable natural gas (methane or RNG). In addition to the production of methane, the digestion process will produce two byproducts that are suitable for beneficial use. These byproducts are a solid digestate material and a liquid digestate. Digestate will be stored in a proposed earthen basin at the site prior to land application.

The Washington AD 1, LLC facility is located at 1740 Bieker Rd, Washington, 63090 in Franklin County, Missouri. The facility has a process wastewater design average flow of 75,000 gpd.

3. COMPLIANCE PARAMETERS

The proposed facility is a no discharge facility and will land apply process wastewater in accordance with Operating Permit MO-0140643 The facility is required to monitor the process wastewater within the storage basin in accordance with Table A-1 as well as volume of wastewater applied and area of application on each land application field.

REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Construction work exempt from construction permitting:

- Components prior to the digestate storage basin are not required to be built under a construction permit per 10 CSR 20-6.010(5)(A) as a non-domestic treatment system. These components were not reviewed as part of the construction permitting process. Major components of the anaerobic digestion facility include:
    - Organics Receiving Area
    - Anaerobic Digester Process
    - Biogas Upgrading System
    - Digestate Management System
    - RNG Interconnect
    - Emergency Power – A standby natural gas generator will be provided to operate the treatment facility in event of power failure

However, components exempt from construction permitting requirements must comply with the following provisions:

- Any facility designed to hold, convey, contain, store, or treat domestic, agricultural, or industrial process wastewater shall be designed by a professional engineer registered in Missouri in accordance with Missouri Design Standards established in Missouri State Regulation 10 CSR 20-8;
- The wastewater facilities shall be constructed in accordance with the registered professional engineer's plans and specifications.

Construction will cover the following items:

- Components are designed to process a wastewater design average flow of 75,000 gpd.
- Pressate Transfer Line – Construction of approximately 2,000 lf of four-inch HDPE DR11 force main with air release valves to transfer process wastewater from the anaerobic digester facility to the digestate storage basin.
  - A concrete ramp and splashpad will be constructed at the pressate transfer line outlet into the digestate basin to prevent scouring of the liner.
- Digestate Storage Basin – This basin will be constructed and sealed with a minimum of 24 inches of compacted low-permeable soils of the site with a maximum permeability of 1×10^{-7} cm/s. The basin will have 3:1 sloping walls, a total operating depth of 16 ft, a maximum sludge depth of 1 ft, a minimum clay liner depth of 2 ft, freeboard of 2 ft, and an emergency spillway depth of 1 ft; the depth from the top of the berms to the lagoon floor is 20 ft. The basin is non-aerated and has a wastewater volume of approximately 21 million gallons. This provides approximately 280 days of retention at the proposed design flow. The berm width will be a minimum of 15 ft. The site will be fenced.
  - Sample Ports – Six sample ports made will be constructed of six-inch diameter SDR 35 PVC pipes along the berm.
  - Cover – A two-layer cover will be installed over the basin made of 80-mil HDPE in accordance with the Geosynthetic Research Institute (GRI) standard specs for HDPE Geomembranes (GRI-GM 13).
  - Rainwater collection – A rainwater collection system will be installed on top of the cover to pump rainwater off of the cover.
  - Odor control – A gas collection system will be installed at the basin to ensure odors are contained and treated. The collection system will use carbon canister to treat odors.
- Load Out Pump Station – Construction of a duplex load out pump station to transfer process wastewater to a valve box which directs flow to either land application vehicles or back to the lagoon for recirculation.
  - The load out station includes a six-inch SDR 21 drainpipe back to the lagoon.

4. OPERATING PERMIT

Operating permit MO-0140643 will be expiring on March 26, 2030. A renewal application must be filed before September 27, 2029, regardless of the status of these construction activities. If you have questions on completing the renewal application, please contact the NPDES permitting section at 573-522-4502.

This facility does not meet the requirements of the MOG822 issued on June 01, 2025, for the following reason: SIC code #4922 is not covered by the MOG822 permit.

Additionally, the construction does not trigger a modification of the operating permit under 10 CSR 20-6.010 and as such it will be evaluated at operating permit renewal to determine if it qualifies for a general permit.

V. NOTICE OF RIGHT TO APPEAL

If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to Section 621.250 RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Any appeal should be directed to:

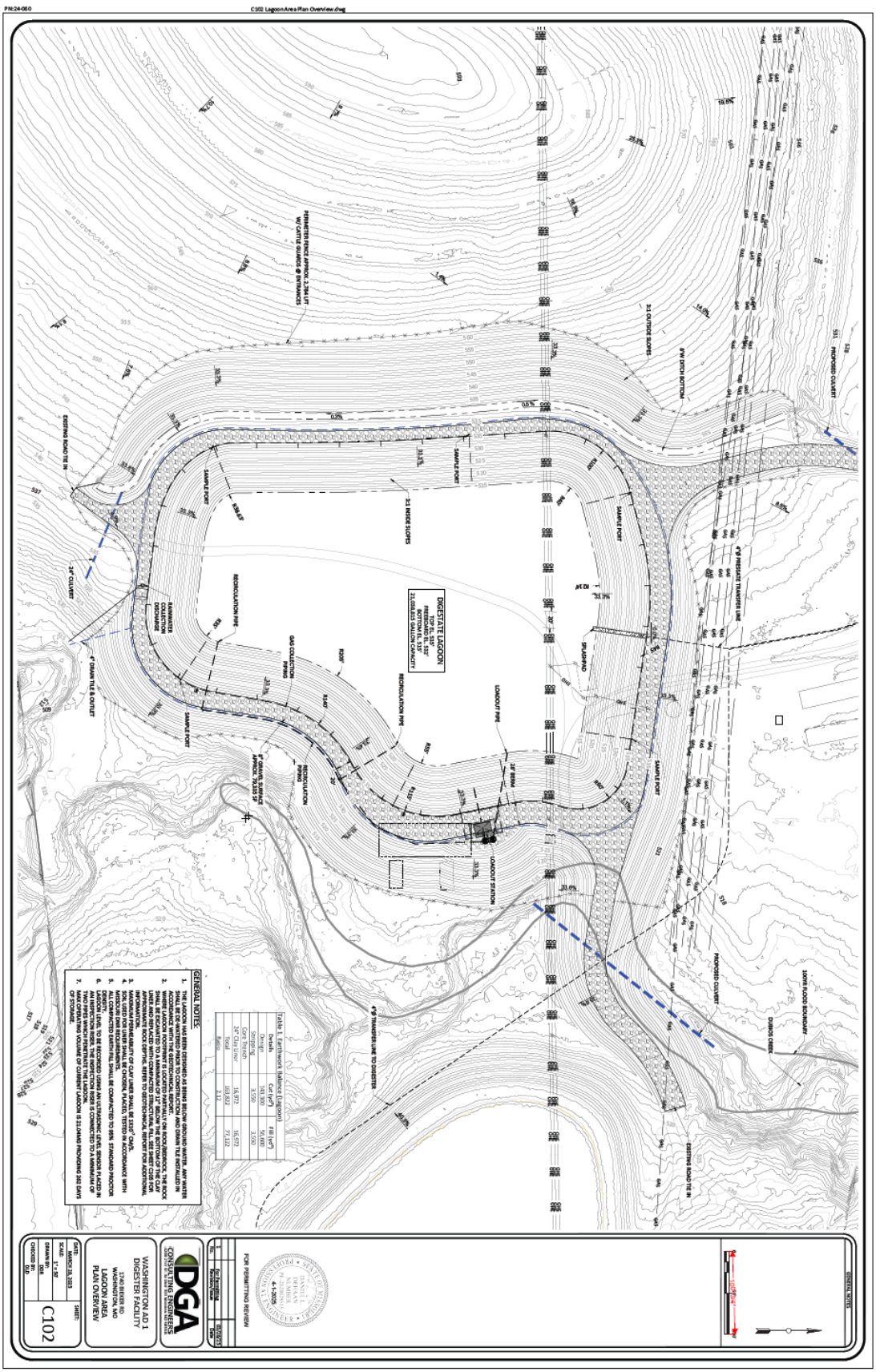
Administrative Hearing Commission
U.S. Post Office Building, Third Floor
131 West High Street, P.O. Box 1557
Jefferson City, MO 65102-1557
Phone: 573-751-2422
Fax: 573-751-5018
Website: https://ahc.mo.gov

Andrew Sell
Engineering Section
andrew.sell@dnr.mo.gov

Chia-Wei Young, P.E.
Engineering Section
chia-wei.young@dnr.mo.gov

APPENDIX

- **Site Plan**



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

APPLICATION FOR CONSTRUCTION PERMIT – WASTEWATER TREATMENT FACILITY

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED	CHECK NO.
DATE RECEIVED	

APPLICATION OVERVIEW

The Application for Construction Permit – Wastewater Treatment Facility form has been developed in a modular format and consists of Part A and B. **All applicants must complete Part A.** Part B should be completed for applicants who currently land-apply wastewater or propose land application for wastewater treatment. **Please read the accompanying instructions before completing this form. Submittal of an incomplete application may result in the application being returned.**

PART A – BASIC INFORMATION

1.0 APPLICATION INFORMATION (Note – If any of the questions in this section are answered NO, this application may be considered incomplete and returned.)

1.1 Is this a Federal/State funded project? ☐ YES ☑ N/A Funding Agency: _____ Project #: _____

1.2 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
☐ YES Date of Approval: _____ ☑ N/A

1.3 Has the department approved the proposed project's facility plan*?
☐ YES Date of Approval: _____ ☑ NO (If No, complete No. 1.4.)

1.4 [Complete only if answered No on No. 1.3.] Is a copy of the facility plan* for wastewater treatment facilities included with this application?
☑ YES ☐ NO ☐ Exempt because _____

1.5 Is a copy of the appropriate plans* and specifications* included with this application?
☑ YES Denote which form is submitted: ☐ Hard copy ☑ Electronic copy (See instructions.) ☐ NO

1.6 Is a summary of design* included with this application? ☑ YES ☐ NO

1.7 Has the appropriate operating permit application (A, B, or B2) been submitted to the department?
☑ YES Date of submittal: 07/09/2024
☐ Enclosed is the appropriate operating permit application and fee submittal. Denote which form: ☐ A ☐ B ☐ B2
☐ N/A: However, In the event the department believes that my operating permit requires revision to permit limitation such as changing equivalent to secondary limits to secondary limits or adding total residual chlorine limits, please share a draft copy prior to public notice? ☐ YES ☐ NO

1.8 Is the facility currently under enforcement with the department or the Environmental Protection Agency? ☐ YES ☑ NO

1.9 Is the appropriate fee or JetPay confirmation included with this application? ☑ YES ☐ NO
See Section 7.0

* Must be affixed with a Missouri registered professional engineer's seal, signature and date.

2.0 PROJECT INFORMATION

2.1 NAME OF PROJECT	2.2 ESTIMATED PROJECT CONSTRUCTION COST
Washington AD 1	$ 3.5M

2.3 PROJECT DESCRIPTION

The Washington AD 1 Anaerobic Digestion Facility (Washington AD 1) proposes to accept organic food waste (OFW) and other approved feedstocks to co-digest them with manure for the primary purpose of harvesting the natural gas methane.

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

Digestate is a by-product of the anaerobic digestion process and is proposed to be routed to an engineered basin for storage. Produced digestate will be land applied pursuant to the Facility land application management plan (LAMP) and MDNR standards.

2.5 DESIGN INFORMATION

A. Current population: N/A ; Design population: N/A

B. Actual Flow: 77.8k gpd; Design Average Flow: 77.8k gpd;
Actual Peak Daily Flow: 88.3k gpd; Design Maximum Daily Flow: 88.3k gpd; Design Wet Weather Event: N/A

2.6 ADDITIONAL INFORMATION

A. Is a topographic map attached? ☑ YES ☐ NO

B. Is a process flow diagram attached? ☑ YES ☐ NO

3.0 WASTEWATER TREATMENT FACILITY

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Washington AD 1	781-232-7597 ext 4	development@vanguardrenewables.co

ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE	COUNTY
1740 Bieker Road	Washington	MO	63090	Franklin

Wastewater Treatment Facility: Mo- (Outfall Of)

3.1 Legal Description: _____ ¼, _____ ¼, _____ ¼, Sec. _____, T _____, R _____
(Use additional pages if construction of more than one outfall is proposed.)

3.2 UTM Coordinates Easting (X): _____ Northing (Y): _____
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3.3 Name of receiving streams: N/A - No Discharge

4.0 PROJECT OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Washington AD 1	781-232-7597 ext 4	development@vanguardrenewables.co

ADDRESS	CITY	STATE	ZIP CODE
1740 Bieker Road	Washington	MO	63090

5.0 CONTINUING AUTHORITY:

A continuing authority is a company, business, entity or person(s) that will be operating the facility and/or ensuring compliance with the permit requirements.

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Washington AD 1, LLC	781-232-7597	development@vanguardrenewables.co

ADDRESS	CITY	STATE	ZIP CODE
133 Boston Post Rd	Weston	MA	02493-2525

5.1 A letter from the continuing authority, if different than the owner, is included with this application. ☐ YES ☐ NO ☑ N/A

5.2 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A MISSOURI PUBLIC SERVICE COMMISSION REGULATED ENTITY.

A. Is a copy of the certificate of convenience and necessity included with this application? ☐ YES ☐ NO

5.3 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A PROPERTY OWNERS ASSOCIATION.

A. Is a copy of the as-filed restrictions and covenants included with this application? ☐ YES ☐ NO

B. Is a copy of the as-filed warranty deed, quitclaim deed or other legal instrument which transfers ownership of the land for the wastewater treatment facility to the association included with this application? ☐ YES ☐ NO

C. Is a copy of the as-filed legal instrument (typically the plat) that provides the association with valid easements for all sewers included with this application? ☐ YES ☐ NO

D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? ☐ YES ☐ NO

6.0 ENGINEER

ENGINEER NAME / COMPANY NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Daniel DeHaan / Dehaan, Grabs, & Associates, LLC	701-391-5464	dan@dgaengineering.com

ADDRESS	CITY	STATE	ZIP CODE
4200 21st St. SE #101	Mandan	ND	58554

7.0 APPLICATION FEE

☐ CHECK NUMBER ☒ JETPAY CONFIRMATION NUMBER 20064016

8.0 PROJECT OWNER: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

PROJECT OWNER SIGNATURE

Kim Martin (Apr 7, 2025 15:36 EDT)

PRINTED NAME	DATE
Kim Martin	4/7/2025

TITLE OR CORPORATE POSITION	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
VP of Development	781-232-7597 ext 4	development@vanguardrenewables.co

Mail completed copy to:
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
P.O. BOX 176
JEFFERSON CITY, MO 65102-0176

END OF PART A.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART B NEEDS TO BE COMPLETE.