TECHNOLOGY PROVIDER
TECHNOLOGY INFORMATION REQUEST

Solution Name:	PLANT		
Information by: (14.a)	Livestock Water Recycling	**Date:**	Aug 2025

COMPANY INFORMATION

Company:	Livestock Water Recycling		
Phone:	Toll Free 1 855-LWR-4972	**Web Site:**	https://www.livestockwaterrecycling.com/
Address:	7920 56th Street SE	**City:**	Calgary
State:	Alberta, Canada	**Zip Code:**	T2C 4S9

TECHNICAL CONTACT (14.a)

Name:	Karleigh Lewis
Phone:	587-323-2176
Email:	Karleigh.lewis@livestockwaterrecycling.com
Address:	7920 56th Street SE
City:	Calgary
State:	Alberta, Canada
Zip Code:	T2C 4S9

DEMONSTRATION SITE CONTACT (15.a)

Site Name:	Robinway Dairy
Contact:	Jay Binverse
Title:	Owner
Phone:	920-901-5655
Email:	jaybinversie@hotmail.com
Address:	17231 Point Creek Rd
City:	Kiel
State:	Wisconsin
Zip Code:	53042

INITIAL TECHNOLOGY OVERVIEW

This information is to guide in the development of a more specific and detailed Technology Information Request.
Please answer the following questions for each Technology or Service Provided.

What is the name of the technology or service you provide?

PLANT

Please provide a brief (1-2 sentence) description and a full description of this technology.

Attach pages or separate document if necessary.

- **Summary: (1.a)** The LWR PLANT system is a modular, data-driven manure treatment platform that transforms livestock waste into clean water and concentrated, high-value fertilizer products, while reducing environmental impact and improving operational efficiency.

Full description: (1.b)

The Livestock Water Recycling (LWR) PLANT system is a fully integrated, modular nutrient recovery and water reuse solution designed to transform livestock manure or digestate into clean water and high-value fertilizer products. Built on LWR's proven technology platform, the PLANT system combines First Wave inlet solids separation, PolyFAST polymer feed automation, Second Wave membrane filtration, grō polymer optimization, and a digital data dashboard to deliver the most advanced and efficient manure treatment process available.

At the front end, the First Wave system features a patented high-performance flocculation chamber and a self-cleaning separation screen that removes up to 99.9% of phosphorus and suspended solids. This inlet solids separation step dramatically reduces hauling and storage requirements while preparing the liquid stream for further processing.

PolyFAST, LWR's fully automatic polymer feed system, ensures reliable batch preparation and precise metering of dry polymer solutions. This accuracy enhances flocculation performance and supports consistent treatment outcomes with minimal operator oversight.

Following initial separation, the Second Wave system uses patented fine solids separation and membrane technology to recover clean, reusable water. Designed for low energy consumption, the Second Wave also features an automated cleaning system that applies a patented cleaning solution daily to maintain membrane performance and longevity.

To further enhance solids removal efficiency, the PLANT system includes grō, a biodegradable polymer tailored for manure applications, and groControl, an automated polymer control system that dynamically adjusts dosing based on system needs. Together, these tools optimize treatment performance and reduce operating costs.

All PLANT systems are equipped with LWR's analytics platform, ManuRewards, which digitizes manure or digestate data to support on-farm decision making. A three-month analytics subscription is included with every installation through the myPLANT mobile app, giving operators immediate access to system insights, performance metrics, and digital recordkeeping for compliance and reporting.

For more than a decade, LWR has been delivering proven nutrient recovery and water reuse solutions to livestock producers worldwide. Many of our systems have been operating successfully for over 10 years, consistently providing reliable performance, low maintenance requirements, and measurable environmental benefits. This long-term operational history demonstrates not only the durability of our equipment, but also our unmatched expertise in designing, commissioning, and supporting manure treatment systems that stand the test of time. LWR's modular, skid-mounted systems are proudly manufactured in North America at our head office facility, where the engineers on our team who designed the systems are there to QC them before they go to the farms!

The PLANT system reflects LWR's commitment to data-driven, low-energy nutrient recovery that supports environmental compliance, operational efficiency, and climate-smart agriculture.

By concentrating nutrients into solid and liquid fertilizers and recovering clean water, the PLANT system helps producers reduce carbon emissions, lower costs, improve herd comfort, and participate in emerging markets for nutrient and carbon credits. This comprehensive solution is trusted by leading livestock operations around the world to improve sustainability while producing more with fewer resources.

Please explain how this technology will improve water quality and/or air quality by one or more of the following: (2.a)

i. **Reducing the nutrient content, organic strength, and/or pathogen levels of manure and agricultural waste.**
ii. **Reducing odors and gaseous emissions**
iii. **Facilitating desirable waste handling and storage**
iv. **Producing value added byproducts that facilitate manure and waste utilization.**

LWR's PLANT system improves both water quality and air quality through a multi-step, closed-loop manure treatment process that targets key environmental pollutants and enhances overall waste management practices on livestock operations. Here's how it aligns with the specified areas:

i. Reducing the nutrient content, organic strength, and/or pathogen levels of manure and agricultural waste:
The PLANT system separates and concentrates nutrients at the source using a combination of solid-liquid separation, polymer treatment, and membrane filtration. The First Wave system removes up to 99.9% of phosphorus and suspended solids, significantly reducing the nutrient load in the remaining effluent. The Second Wave system further filters fine solids and pathogens through membrane technology, producing a clean water stream suitable for reuse. By removing organic material and concentrating nutrients into discrete solid and liquid fertilizer streams, the system reduces the organic strength of manure and supports compliance with nutrient management regulations.

ii. Reducing odors and gaseous emissions:
By removing volatile solids and separating manure into stabilized components quickly after collection, the system minimizes anaerobic decomposition, which is the primary source of odor and greenhouse gas (GHG) emissions such as methane and ammonia. Treated effluent contains far fewer volatile compounds, leading to reduced odor during storage, transport, and field application. Additionally, the reduced need for lagoon storage and fewer land applications mean less opportunity for gaseous emissions to escape into the atmosphere, supporting improved air quality and reduced environmental impact.

iii. Facilitating desirable waste handling and storage:
The PLANT system transforms raw manure or digestate into three manageable outputs: clean water, a nutrient-rich liquid fertilizer, and a stackable solid fertilizer. This modular output dramatically reduces the overall volume of waste, lowers hauling and application costs, and simplifies on-site storage requirements. The clean water can be reused for livestock, irrigation, or cleaning purposes, reducing freshwater withdrawals. The separated nutrient streams allow for more precise nutrient application and seasonal storage flexibility, supporting better agronomic practices and reducing runoff potential.

iv. Producing value-added byproducts that facilitate manure and waste utilization:
Instead of a single waste stream, the PLANT system generates value-added byproducts in the form of concentrated solid and liquid fertilizers that can be marketed or reused more efficiently on-farm. These byproducts are easier to transport and apply and contain nutrients in forms that are more readily available to crops. This creates new revenue opportunities while promoting the beneficial use of manure nutrients and reducing dependence on synthetic fertilizers. By digitizing nutrient and water data, the system also enables participation in carbon and nutrient credit markets, unlocking further environmental and financial benefits.

In summary, the LWR PLANT system improves water and air quality by removing pollutants at the source, reducing harmful emissions, enabling better waste handling, and creating valuable products from manure. These benefits contribute directly to more sustainable and climate-smart livestock production systems.

Do you have a preferred region or area for the location of projects?

No, the equipment is to be housed inside an insulated building regardless of location, making it suitable anywhere in the world.

Location of farm(s)?

We have installations in Canada, US, UK and Lebanon.

What's the smallest and largest farm using this system?

600-7200 cows

Input and output of this unit/system – do you have a mass balance analysis? (3.a)
If a mass balance is available, please include below or attach as a separate document.

See attached mass balance, Appendix A, for 1000 cows and 100,000gallons/day manure treatment.

Input material description and characteristics: (4.a)
For example: raw manure, digestate, screened digestate, suitable non-farm feedstocks, other.

Raw manure or digestate below 6% Total Solids, prescreened to remove fiber.

Please provide the expected performance of this technology related to the following: (5.a)

i. **Changes in form or handling characteristics**
ii. **Nutrient fate or end use projections**
iii. **Macro-nutrient reductions or transformations**
iv. **Pathogen reductions or elimination**
v. **Air emissions (including gaseous ammonia, hydrogen sulfide, and volatile organic compounds)**

Here is a detailed explanation of the expected performance of the LWR PLANT system based on the listed criteria:

i. Changes in form or handling characteristics
The LWR PLANT system significantly alters the physical and chemical form of manure or digestate by separating it into three distinct outputs: a solid fertilizer, a liquid fertilizer concentrate, and clean, reusable water. Raw manure is transformed from a single, bulky, high-moisture waste stream into stabilized, stackable solids and pumpable, nutrient-rich liquids. This separation reduces total waste volume by up to 70%, greatly improves handling efficiency, reduces the need for large lagoon storage, and lowers hauling and land application costs. The system also eliminates the need for mechanical agitation of lagoons, reducing labor and equipment demands.

ii. Nutrient fate or end use projections
The system captures and isolates macro- and micro-nutrients into targeted fertilizer products, allowing for more controlled, site-specific application. Phosphorus and a portion of nitrogen are captured in the solid stream, while ammonia nitrogen and potassium remain in the liquid stream. This segmentation enables farms to align nutrient application with crop needs more precisely and reduces the risk of nutrient overloading in sensitive areas. The concentrated nature of the outputs supports regional transport or off-farm sale for broader utilization.

iii. Macro-nutrient reductions or transformations
The PLANT system achieves high levels of macro-nutrient separation. Independent lab-verified results have shown:

- Phosphorus reduction of up to 95% from the liquid stream via flocculation and solid-liquid separation
- Nitrogen redistribution, with a significant portion of ammonium remaining in the liquid stream for crop-available fertilizer use
- Volatile solids reduction, which lowers the organic loading and reduces downstream nitrogen volatilization potential

By removing solids and concentrating nutrients, the system minimizes uncontrolled nutrient losses to the environment and provides stable, usable end products.

iv. Pathogen reductions or elimination
While the PLANT system is not a thermal or chemical pathogen kill system, it achieves pathogen reductions through mechanical separation and membrane filtration. The Second Wave membrane process removes fine particles and associated pathogens such as fecal coliforms, resulting in a significantly cleaner liquid stream. Clean water output is low in biological content, reducing the risk of disease transmission if reused on-farm. Additional reductions in pathogen risk are achieved by removing fresh manure from lagoons and reducing anaerobic decomposition.

v. Air emissions (including gaseous ammonia, hydrogen sulfide, and volatile organic compounds)
The system reduces air emissions through immediate separation of solids and liquids after manure collection, limiting anaerobic breakdown that produces gaseous emissions. By rapidly removing volatile solids and ammonia from the storage environment, the system helps reduce:

- Ammonia (NH_3) emissions by decreasing the opportunity for volatilization
- Hydrogen sulfide (H_2S) through reduced anaerobic decomposition of sulfur compounds
- Volatile organic compounds (VOCs) associated with manure odor and degradation

Field experience has shown that treated manure products produce significantly less odor during storage and application, leading to improved air quality and neighbor relations.

In summary, the LWR PLANT system delivers strong environmental performance by transforming manure into manageable outputs, isolating nutrients for beneficial use, reducing pathogens, and lowering air emissions associated with livestock waste management.

Do you consider this a mature system or ongoing farm development?

Yes, mature system.

Any weather constraints? **Yes** ☑ **No** ☐ *If so, please describe.*

Equipment is to be housed inside an insulated building.

Any bedding constraints? **Yes** ☑ **No** ☐ *If so, please describe.*

Fiber and sand separation ahead of the PLANT system required.

Output material description and characteristics:
Please include the % of the total stream for each material, i.e. 10% fiber and 90% screened liquid by weight.

8% Stackable solids

22% Liquid concentrate

70% Clean water

Do the outputs of the process have a resale market identified? **Yes** ☑ **No** ☐
If so, under what brand name or who is the contract with?

Most farms sell part if not all their solids and liquid concentrate off farm to surrounding crop farms or nursery's. A farm in Wisconsin sells theirs under the brand name Bucky Organics.

Please provide any alternative uses for the byproducts produced by this technology. (11.a)

Concentrated solids from the LWR system can be used to boost volatile solids in an anaerobic digester or as feedstock for a biochar facility. Manure treated through the LWR process may qualify for carbon credit generation, creating opportunities in both voluntary and inset markets. The separated liquid stream can be land-applied through pivot or drip irrigation systems.

Is this process scalable and to what extent (top and bottom limits)? **Yes** ☑ **No** ☐ *If so, please describe.*

Equipment is skid mounted making it easy to scale if a farm expands and requires more manure treatment.

Does this technology require any air input? **Yes** ☐ **No** ☑

What is the preferred air connection? *For example: psi, fitting size, air quality.*
If not distributed by the system, please list each connected device.

N/A

Does this technology require any water input? **Yes** ☑ **No** ☐ *If so, please describe.*

Water is needed for polymer make down at start up.

What is the preferred water connection? *For example: psi, fitting size, water quality, gpm.*
If not distributed by the system, please list each connected device.

Once system is up and running a slip stream of the clean water is recycled back to the front end for polymer make down.

Does this technology require any electrical input? **Yes** ☑ **No** ☐ *If so, please describe.*

System is run on electrical power.

What is the preferred electrical connection? *For example: phase #, voltage, full load amps.*
If not distributed by the system, please list each connected device.

3Phase power and 480V. Amps depend on system size – reach out to LWR for each systems details.

Does this technology require any mechanical input? **Yes** ☐ **No** ☑ *If so, please describe.*

What is the preferred mechanical connection? *For example: horsepower, connection, rpms.*
If not distributed by the system, please list each connected device.

N/A

Does this system require any special plumbing? **Yes** ☐ **No** ☑ *If so, please describe what is required.*

Does this system require any special foundations or pads? Yes ☑ No ☐ *If so, please describe.*

Building to house equipment requires cement pad with floor drains to place equipment on to.

Do you consider this technology part of a larger system that you provide? Yes ☐ No ☑ *If so, please describe.*

Does this system require any other components that you do not provide or are not included in this proposal? Yes ☑ No ☐
If so, please describe.

Building to house the equipment in.

How is the system delivered to the site? *For example: skid mounted, assembled on site, constructed on site.*

Skid mounted.

Is this system portable or configured in such a way that it could be easily transported for use in several locations?
Yes ☑ No ☐ *If so, please describe.*

The system is designed for permanent installation but since it is skid mounted could be transported.

Does this technology negatively impact another critical area or have other regulated characteristics (i.e. emissions, sound, odor)? If so, what are these impacts and what mitigation measures have been if required by state or local agencies?
If so, please describe the recommended means of mitigating these impacts.

None.

What spare parts and redundant components are included with the system?

LWR will provide an optional spare part list of the major component of the system for client to consider. The following items have spares that come with the system: electrical fuses, relays and spray bar nozzles. LWR offers an online platform for polymer, spare parts ordering and technician service visit bookings.

What equipment, time and resources are required for monitoring this technology and what equipment is included for monitoring this technology? (6.a)

The equipment is run by a PLC and is connected to the internet. There are various meters and sensors throughout the system that allow for remote access monitoring as well as daily data collection.

What equipment, time and resources are required to control this technology and what equipment is included for controlling this technology? (6.b)

The equipment is run by a PLC and is connected to the internet. There are various meters and sensors throughout the system that allow for remote access monitoring as well as daily data collection.

What is the usable life of the system?

20+ years is the lifespan of LWR's equipment.

What is the salvage value at the end of the usable life?

$20,000 stainless steel value.

What is the educational and technical level of competence for the operation of the system?

Operators are farm staff who are trained by LWR's technicians during start up and commissioning of the equipment. No formal training or certificates are required to operate the system.

What level of maintenance is required for the system? (7.a)
Please indicate if rebuilds or major components must be replaced and what the frequency is for these components.

A maintenance schedule is provided in Appendix B. LWR also offers service packages that include but are not limited to over the phone service calls, remote access trouble shooting assistance and onsite technician optimization visits.

Are consumables used in the process? Yes ☑ No ☐

Please provide the nature and purchase relationship for these consumables. For example: proprietary, special contract, generally available.

Yes, a proprietary flocculant is used in the process, this is purchased directly from LWR. LWR works with the largest chemical manufacturer in the world and provides competitively priced products to their customers.

Which of these NRCS codes would this technology be classified under? *Check all that apply. Add if necessary.*

CODE	NRCS DESCRIPTION	CHECK ALL THAT APPLY
472	Access Control	☐
560	Access Road	☐
309	Agrichemical Handling	☐
371	Air Filtration and Scrubbing	☐
591	Amendments for the Treatment of Agricultural Waste	☑
366	Anaerobic Digester	☐
672	Building Envelope Improvement	☐
372	Combustion System Improvement	☐
317	Composting Facility	☐
554	Drainage Water Management	☐
375	Dust Control from Animal Activity on Open Lot Surfaces	☐
373	Dust Control on Unpaved Roads and Surfaces	☐
374	Farmstead Energy Improvement	☐
512	Forage and Biomass Planting	☐
561	Heavy Use Area Protection	☐
516	Livestock Pipeline	☐
590	Nutrient Management	☑
521A	Pond Sealing or Lining, Flexible Membrane	☐
533	Pumping Plant	☐
588	Roof Runoff Structure	☐
367	Roofs and Covers	☐
318	Short-Term Storage of Animal Waste and By-Products	☐
570	Stormwater Runoff Control	☐
606	Subsurface Drain	☐
635	Vegetated Treatment Area	☐
601	Vegetative Barrier	☐
360	Waste Facility Closure	☐
632	Waste Separation Facility	☑

313	Waste Storage Facility	☐
634	Waste Transfer	☐
629	Waste Treatment	☑
359	Waste Treatment Lagoon	☐
		☐
		☐
		☐

Please provide an estimated installed capital cost for this technology and indicate the model, cow number or volume that this cost applies to. (8.a)
Please include all components and designate if provided by you or others.

LWR Plant System	Herd Size	Approx. Monthly Payments
Sprout	**100-200**	**$10,884**
Plant^{10}	**300-750**	**$15,388**
Plant^{40}	**500-1,200**	**$20,691**
Plant^{85}	**1,000-3,500**	**$25,846**
Plant^{185}	**2,800 – 6,500**	**$40,793**

Monthly pricing based on 10-year lease with 8% interest.

All units include groControl and FAN Separators for dewatering of solids. Plant85 and 185 systems include polyFAST as well. Sprout, Plant10 and Plant40 includes manual polymer make down with the clients choice to add polyFAST for an additional cost.

Please provide an estimated annual operation cost for this technology and indicate the model, cow number or volume that this cost applies to. (8.b)
Please include all costs and designate if provided by you or others.

~$0.01/gallon for flocculant for the PLANT system. This is based on the influent Total Suspended Solids value of <3%.

Is there financing available for this system? **Yes** ☑ **No** ☐ *If so, what are the conditions for this financing?*

LWR provides financing for the equipment, this is a 10-year lease to own at 8% interest.

Is the system available for lease? **Yes** ☑ **No** ☐ *If so, please describe.*

See above.

What sort of warrantee or guarantee do you provide with this technology? (9.a)
Do you provide any performance guarantees or strictly defects in parts and materials?

LWR provides performance guarantees on the performance of the equipment based on influent parameters and treatability testing.

Explain how this system is unique or transformative and how does it improve upon or go beyond other technologies that are currently available.

The LWR PLANT system is a transformative manure treatment technology that uniquely integrates solids separation, nutrient recovery, clean water reuse, and emissions reduction into a single, modular platform. Unlike traditional systems that address only one component of manure management, the PLANT system combines patented solids and membrane separation technologies (First Wave and Second Wave), automated polymer control (grō and groControl), and precise polymer dosing (PolyFAST), all connected through a centralized data dashboard. Backed by more than a decade of real-world performance, with many systems operating successfully for over 10 years, the PLANT system blends cutting-edge innovation with proven durability, low maintenance requirements, and measurable environmental benefits.

What sets the PLANT system apart is its ability to achieve exceptionally high performance across key metrics. It removes up to 95% of phosphorus, reduces organic load, and produces clean, reusable water—all with minimal energy input. The output is separated into stackable solids, nutrient-rich liquid fertilizer, and water that can be reused for livestock or irrigation. This transformation not only reduces hauling and storage costs but also supports more precise nutrient application and improved environmental compliance. The system's long-term track record proves that these results are not just achievable—they are sustainable year after year under commercial operating conditions.

A major innovation is the integration of digital tools, including LWR's myPLANT app and ManuRewards analytics platform. These tools digitize treatment data in real time, enabling better on-farm decision-making, automated reporting for regulatory compliance, and access to emerging nutrient and carbon credit markets. This level of data transparency and automation is unmatched in the manure treatment space and is reinforced by more than 10 years of operational expertise in designing, commissioning, and supporting systems that deliver measurable climate impact.

Overall, the LWR PLANT system goes beyond conventional manure management by converting a liability into an asset. It improves water and air quality, reduces greenhouse gas and ammonia emissions, and creates high-value fertilizer products from what was previously considered waste. With its modular design, high performance, and digital intelligence—all supported by a decade-plus of proven field success—the PLANT system offers a future-ready solution for farms looking to increase productivity, meet sustainability goals, and unlock new revenue opportunities.

Please provide the recommended record keeping procedures for end users of this technology. (10.a)

With an internet connection the system logs data every 5 min and stores this data. The sites and LWR have access to this historical data which includes run time, flow rates, inlet and outlet data such as TSS measurements.

NRCS considers it the responsibility of the technology provider to furnish information from a university or other independent research entity to document the effectiveness of the technology to achieve its intended purpose in order to be funded through its programs. This information must provide independent, verifiable data demonstrating results of the use of the facility, technology or process in other similar situations and locations and, if available, document the effectiveness of the technology under different climatic factors. Documentation from peer reviewed journals is preferable. Where use of a waste treatment facility or process to improve one resource concern negatively impacts another, impacts and mitigation measures, if required by state or local agencies, are to be documented.

Can you provide independent, verifiable data demonstrating results for the use of this technology in other similar situations and locations? Would you be willing to provide this data in order to qualify for NRCS funding? (12.a)

Yes, Olds College has tested clean water from an operating site and completed a report. See Appendix C.

If information is provided related to the previous question, please provide the credentials of the individual collecting the data and analyzing the results along with disclosure of potential conflicts of interest. (13.a)

Olds College, Olds, Alberta, Canada

Beatrice Amar Ph.D

Tanya McDonald M.Sc

Carien Vandenberg M.Sc.

No potential conflicts of interest.

Newtrient has developed a third-party evaluation protocol that can be used in conjunction with a local university or state extension agency to evaluate technologies in a way that will meet the NRCS requirements. Please contact mstoerm@newtrient.com if you are

interested in contracting for this service.

TECHNOLOGY REFERENCES

Please provide customers with whom we can discuss this technology and its performance. (15.a)
Include a company name, location, contact name and contact information.

Reference 1

Company Name:	Robinway Dairy
Company Location:	Wisconsin
Contact Name:	Jay Binverse
Contact Information:	jaybinversie@hotmail.com

Reference 2

Company Name:	
Company Location:	
Contact Name:	
Contact Information:	

Reference 3

Company Name:	
Company Location:	
Contact Name:	
Contact Information:	

Reference 4

Company Name:	
Company Location:	
Contact Name:	
Contact Information:	

Are there any other facts about this technology that you feel should be included in this document?

An important fact to highlight is that LWR's technology is one of the few manure treatment systems that has achieved third-party verification and validation through VERRA, a leading global carbon standard. This recognition confirms that the LWR process can generate quantifiable and verifiable carbon credits by reducing methane emissions through the avoidance of anaerobic lagoon storage. This milestone enables livestock operations using LWR to participate in both voluntary and inset carbon markets, creating new revenue streams while supporting corporate sustainability goals. Additionally, the LWR system's patented and sensor-driven design provides unmatched data transparency, allowing producers to track environmental performance in real time and demonstrate measurable climate impact.

The questions above have been adapted to attempt to glean as much information as possible in order to help Newtrient develop technology documentation that will meet the standards of what is required in a review package for technology to be approved under NRCS Practice Standard 629 (CPS 629 - Waste Treatment) **Note the definition of Waste Treatment is "The use of unique or innovative mechanical, chemical or biological technologies that change the characteristics of manure and agricultural waste".**

NRCS documentation specifies that the review package shall contain the following 15 items (in black) and from these Newtrient has developed the questions in this document (in red):

1. **A description of the technology. If lengthy, this may be placed in an appendix.**
    a. **Please provide a brief (1-2 sentence) description of this technology.**
    b. **Please provide a full description of this technology. (Attach pages if necessary)**
2. **An explanation of how this technology will accomplish one or more of the purposes of the standard.**
    a. **Please explain how this technology will improve water quality and/or air quality by one or more of the following:**
        i. **Reducing the nutrient content, organic strength, and/or pathogen levels of manure and agricultural waste.**
        ii. **Reducing odors and gaseous emissions**
        iii. **Facilitating desirable waste handling and storage**
        iv. **Producing value added byproducts that facilitate manure and waste utilization.**
3. **The range of volumetric and mass flow rate capacities and hydraulic retention times of the waste streams including the influent, effluent, and recycle streams.**
    a. **Please provide a detailed mass balance that demonstrates the range of volumetric and mass flow rate capacities and hydraulic retention times of the waste streams including the influent, effluent, and recycle streams for this technology by model number or as related to a specific flow or number of animals (i.e.1,000 cows per day or 100,000 gallons per day).**
4. **The characteristics of the influent waste stream important to the waste treatment or process.**
    a. **Are there any characteristics of the influent waste stream important to the proper operation of this technology?**
5. **Expected system performance related to changes in form, nutrient fate projections, macro-nutrient reductions, pathogen reductions and air emissions including gaseous ammonia, hydrogen sulfide, and volatile organic compounds.**
    a. **Please provide the expected performance of this technology related to the following:**
        i. **Changes in form or handling characteristics**
        ii. **Nutrient fate or end use projections**
        iii. **Macro-nutrient reductions or transformations**
        iv. **Pathogen reductions or elimination**
        v. **Air emissions (including gaseous ammonia, hydrogen sulfide, and volatile organic compounds)**
6. **Process monitoring and control system requirements.**
    a. **What equipment, time and resources are required for monitoring this technology and what equipment is included for monitoring this technology?**
    b. **What equipment, time and resources are required to control this technology and what equipment is included for controlling this technology?**
7. **A typical operation and maintenance plan that includes performance monitoring requirements and a replacement schedule for components that do not have a minimum life span of ten or more years.**
    a. **Please provide a typical operation and maintenance plan that includes performance monitoring requirements and a replacement schedule for components that do not have a minimum life span of ten or more years.**
8. **Estimated installation and annual operation cost.**
    a. **Please provide an estimated installed capital cost for this technology and indicate the model, cow number or volume that this cost applies to.**
    b. **Please provide an estimated annual operation cost for this technology and indicate the model, cow number or volume that this cost applies to.**
9. **An example of a warranty on all construction or applied processes not covered by other NRCS Conservation Practice Standards.**

   a. Please provide an example of a warranty on all construction or applied processes included with this technology.
10. Recommended record keeping procedures for end users.
   a. Please provide the recommended record keeping procedures for end users of this technology.
11. Alternatives for the use of the byproducts produced by the system.
   a. Please provide the alternative uses for the byproducts produced by this technology.

It is the responsibility of the technology provider to furnish information from a university or other independent research entity to document the effectiveness of the technology to achieve its intended purpose. Provide independent, verifiable data demonstrating results of the use of the facility or process in other similar situations and locations. If available document the effectiveness of the technology under different climatic factors. Documentation from peer reviewed journals is preferable. Where use of a waste treatment facility or process to improve one resource concern negatively impacts another, impacts and mitigation measures, if required by state or local agencies, are to be documented.

12. Independent, verifiable data demonstrating results for the use of the facility or process in other similar situations and locations.
   a. Can you provide independent, verifiable data demonstrating results for the use of this technology in other similar situations and locations? Would you be willing to provide this data in order to qualify for NRCS funding?
13. The credentials of the individual collecting the data and analyzing the results along with disclosure of potential conflicts of interest.
   a. If information is provided related to the previous question, please provide the credentials of the individual collecting the data and analyzing the results along with disclosure of potential conflicts of interest.
14. Contact information for the technology provider.
   a. Please provide a technical contact and a business contact to answer questions regarding the information provided for this technology.
15. Contact information for individuals that have implemented this technology at the farm scale.
   a. Please provide contact information for individuals that have implemented this technology at the farm scale.