TECHNOLOGY PROVIDER

TECHNOLOGY INFORMATION REQUEST

Technology/Service:	horticultural prod production, nutrient removal		
Information by:		**Date:**	2/11/2016

COMPANY INFORMATION

Company Name:	Nutrient Control Systems, Inc. (NCS)		
Phone:	717.261.5711	**Web Site:**	http://www.ncsysinc.com/
Address:	126 Sunset Blvd. East	**State:**	PA
City:	Chambersburg	**Zip Code:**	17202

TECHNICAL CONTACT

Name:	Tim Rensch
Phone:	717.261.5711 or 717.729.2749 mobile
Email:	trensch@ncsysinc.com
Address:	126 Sunset Blvd. East
City:	Chambersburg
State:	PA
Zip Code:	17202

DEMONSTRATION SITE CONTACT

Site Name:	Response not given
Contact:	
Title:	
Phone:	
Email:	
Address:	
City:	
State:	
Zip Code:	

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?

Bedding production, horticultural product production, nutrient removal

Describe how this technology is used in a larger Nutrient Management System. *Please be as detailed as possible.*

Response not given

How many systems do you have installed on dairy farms or other livestock operations?

	Number of Sites	Size of Installations
Dairy	100+ in US, 1000+ worldwide	100 cow to 5,000 cow+
Pork		
Poultry		

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

No

Location of farm(s)?

Encompass major dairy regions of the US

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

100 – 5,000 cows +

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

Yes. Mass balance is dependent upon specific farm size and level of solids removal used. A mass balance would be furnished with proper confidentiality agreements.

Input material description/characteristics:
For example: raw manure, digestate, screened digestate, suitable non-farm feedstocks, other.

Any pumpable input

Does the technology treat the full manure stream for a farm or a fraction of the stream?

Full

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

Mature

Any weather constraints? ◯ **Yes** ◉ **No** *Please describe.*

Any bedding constraints? ◯ **Yes** ◉ **No** *Please describe.*

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

Output solids are 20-45% by volume on a net mass balance basis (net of recycled water on flushing dairies).

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?

Confidential

Is this process scalable and to what extent (top and bottom limits)? *Please describe.*

Yes

Do you have a known scaling factor? *Please describe.*

N/A

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.

Certain components do.
Confidential

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

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.

Parlor water inputs are preferred.

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

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

Systems can accommodate single and three phase voltage. Overall system amp load varies with farm size and voltage considerations. Generally speaking systems range from 35 hp per units of 1,500 input cows for primary solids removal and 70 hp per 1,500 cow secondary solids removal.

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.

Confidential

Does this technology require any special plumbing? ◉ **Yes** ○ **No** *Please describe what is required.*

Systems are generally plumbed in PVC

Does this system require and special foundations or pads? ◉ **Yes** ○ **No** *If so, please describe.*

Site engineered

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

Response not given

Does your system require any other components that you do not provide or are not included in your proposal?
◉ **Yes** ○ **No** *If so, please describe.*

Farm provides electric power supply and liquids storage

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

All listed

Is this system portable or configured in such a way that it could be easily transported for use in several locations?
◉ **Yes** ○ **No** *Please describe.*

Generally yes but fixed placed installations will perform better.

Has your technology been accepted by the NRCS and is it included into a practice standard? ◉ **Yes** ○ **No**
Describe if necessary.

Response not given

Are the any unusable or hazardous byproducts of this process? ◯ Yes ◉ No
If so, please describe the product and recommended means of disposal.

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

Spare parts are typically purchased as required.

How is the system controlled and what are the components and capabilities of the control system?

PLC based with optional remote capability

What is the usable life of the system?

5-20 years depending upon which components.

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

Response not given

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

Ranges from basic mechanical skills to specialized electrical knowledge.

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

Manuals that address this can be furnished upon specific request. Most significant maintenance is on an annual basis

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.

Wear parts on mechanical components – NCS controls these items
Certain secondary removal processes can require proprietary chemistry

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

CODE	NRCS DESCRIPTION	APPLIES
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	
558	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	

Can you provide an estimate of the capital required for the installation of this technology?
Please include all components and designate if provided by you or others.

This is highly project specific but generally basic systems are $60k in capex ranging to $1M plus depending upon treatment goals. Bedding systems will typically range $60k-300k. Secondary nutrient removal - $300k-700k. Fiber product production systems costs are confidential.

Can you provide an estimate of the operational costs required for this technology?
Please include all costs and designate if provided by you or others.

Basic systems are approximately $10-20 per cow annually (electrical and all O/M). Secondary nutrient removal systems will range from $10-20 per cow without chemistry and $50 to 100 per cow with chemistry

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

Yes. Application specific.

Is the system available for lease? ◉ **Yes** ○ **No** *Please describe.*

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

Both performance and parts/materials.

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

This technology uses a building block approach with each component and process building upon this next. This allows the system to be realistic for small farms while having the ability to add in more advanced processes with larger facilities. The processes can run with any bedding type. The systems are not theoretical rather they are real functioning technology that operators at the farm level can actually handle.

Would you be willing to provide a location for a site visit by Newtrient? ◉ **Yes** ○ **No**
If so, please provide location.

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

Reference 1

Company Name:	Provided upon specific request with prior advance appointment.
Company Location:	
Contact Name:	
Contact Information:	

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?