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Harvest Energy | Capture Nutrients | Reclaim Water™

Sustainable Treatment of Manure for the 21st Century

Executive Briefing

September 2015

Integrated Manure Management System™

Lower Operating Costs | Environmentally Sustainable | Enables Expansion

Wet or Dry Fertilizers

Farm Heat & Electricity

Clean Water Discharge

Clean Drinking Water

The IMMS Value Proposition

- Fully integrated and modular manure treatment system (IMMS) that harvests energy and generates biogas, concentrates and captures nutrients for crops and reclaims clean water for farm use
- Scalable to farms of 20,000 cows plus
- Proprietary design and patents
- Lowest CAPEX/OPEX manure treatment system on the market today
- The IMMS combines a high efficiency/low residence time anaerobic digester (**BioEliminator™**) with a highly automated ultra-filtration/reverse osmosis/ion exchange/UV system (**NCWR™**)
- The NCWR concentrates nutrients into 40% of the volume without the use of chemicals or polymers while removing the remaining 60% as clean water suitable for drinking water for the animals, washing and flushing on the farm or can be discharged into the local waterway with the appropriate DNR permit. The nutrients can also be dried or pelletized for easy storage or transport out of the watershed.

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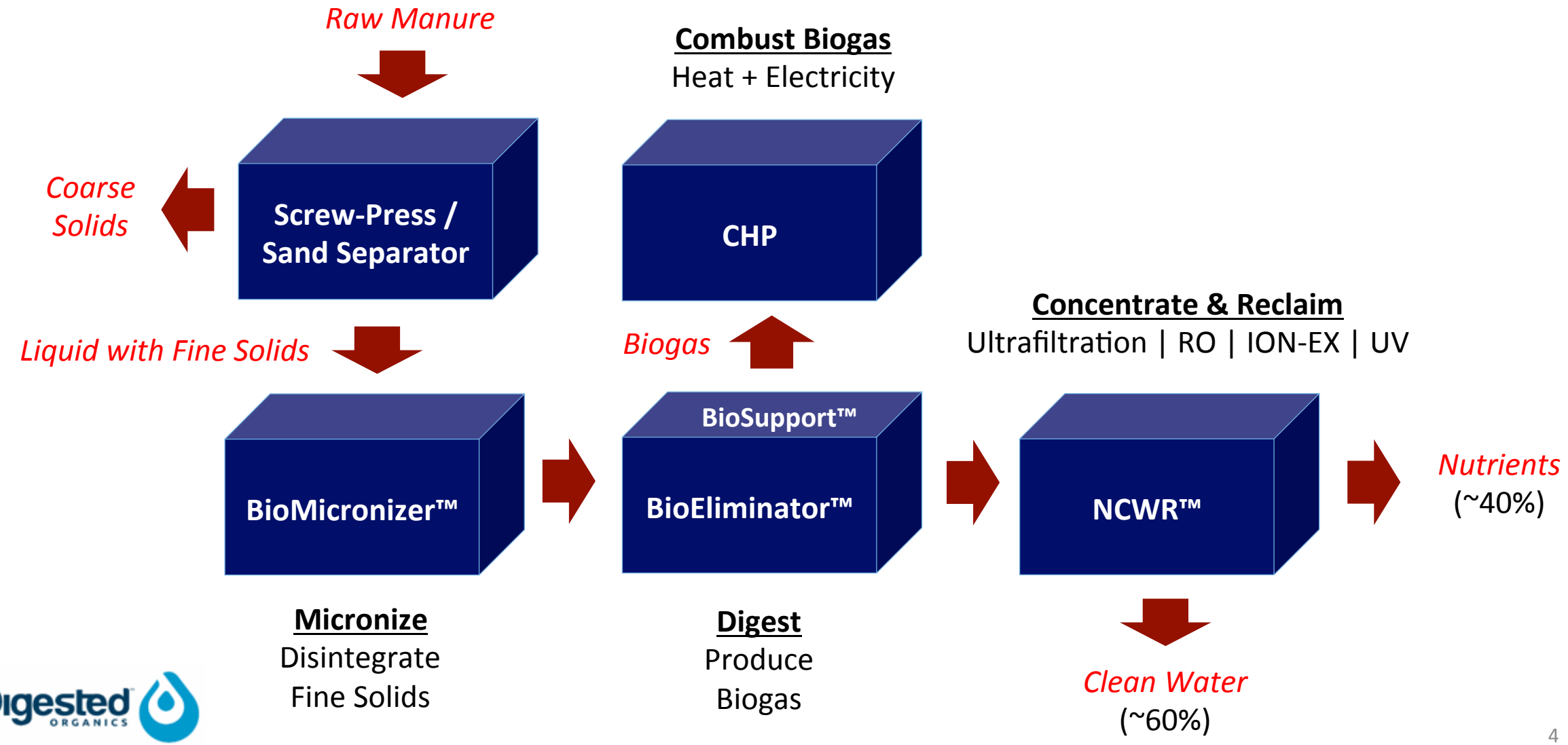
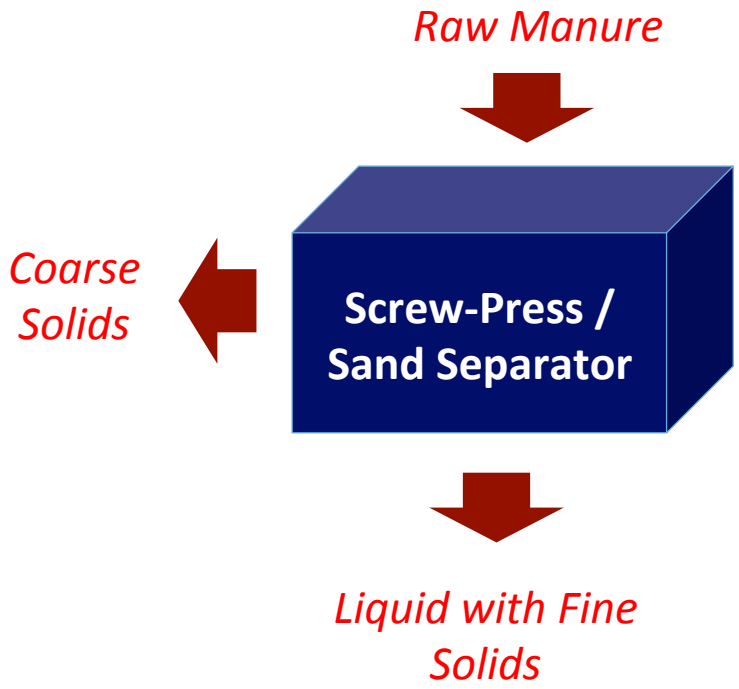
Integrated Manure Management System™



Step #1

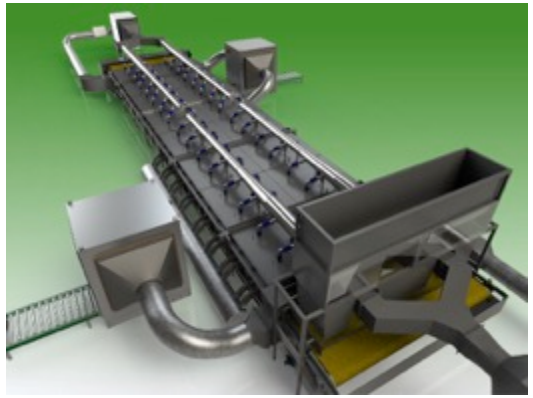
Remove Coarse Solids/Sand from Manure; Creates Valuable By-products



or

Bedding Compost

Coarse solids can be recycled for compost or reused for bedding



Drying the coarse solids post separation helps lower somatic cell count and improve cow comfort

Step #2

Energy-efficient Feedstock Preparation

Raw Manure

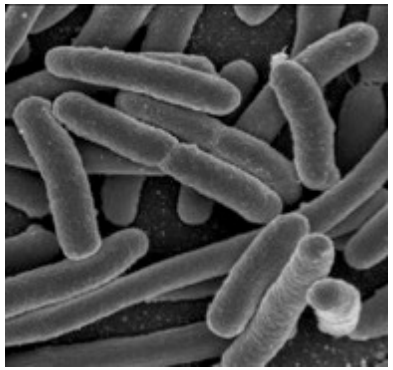
Coarse Solids

Screw-Press / Sand Separator

Liquid with Fine Solids

BioMicronizer™

Micronize
Disintegrate
Fine Solids



Bacteria are ~1-5 microns

Fine sand is ~50-200 microns

Straw is ~10,000 microns wide

- Disintegrate solids in manure
- Increases surface area for microbes to digest waste faster
- Homogenizes manure to reduce settling and build-up in digester

In lab testing, our system ***increased the concentration of organics smaller than 1.5 microns by more than 200%!***

Step #3

Highly Efficient – Attached Growth Reactor

Bio-Support

Raw Manure

Coarse Solids
Bedding or Compost

Screw-Press / Sand Separator

Liquid w/ Fine Solids

Biogas

BioMicronizer™

BioSupport™
BioEliminator™

Disintegrate Fine Solids

Produce Biogas

Modular

Sectioned Tank

- 5-day retention time—shortest in industry
- Underground concrete, plug-flow reactor
- Contains plastic media inside to provide surface for microbes to grow
- Creates heat and power
- Reduce odors and pathogens
- Recover more bio-available nutrients
- Highly concentrated BioSupport- excellent source of essential trace elements and bio-activators
- Custom-formulated based on what's missing in your manure

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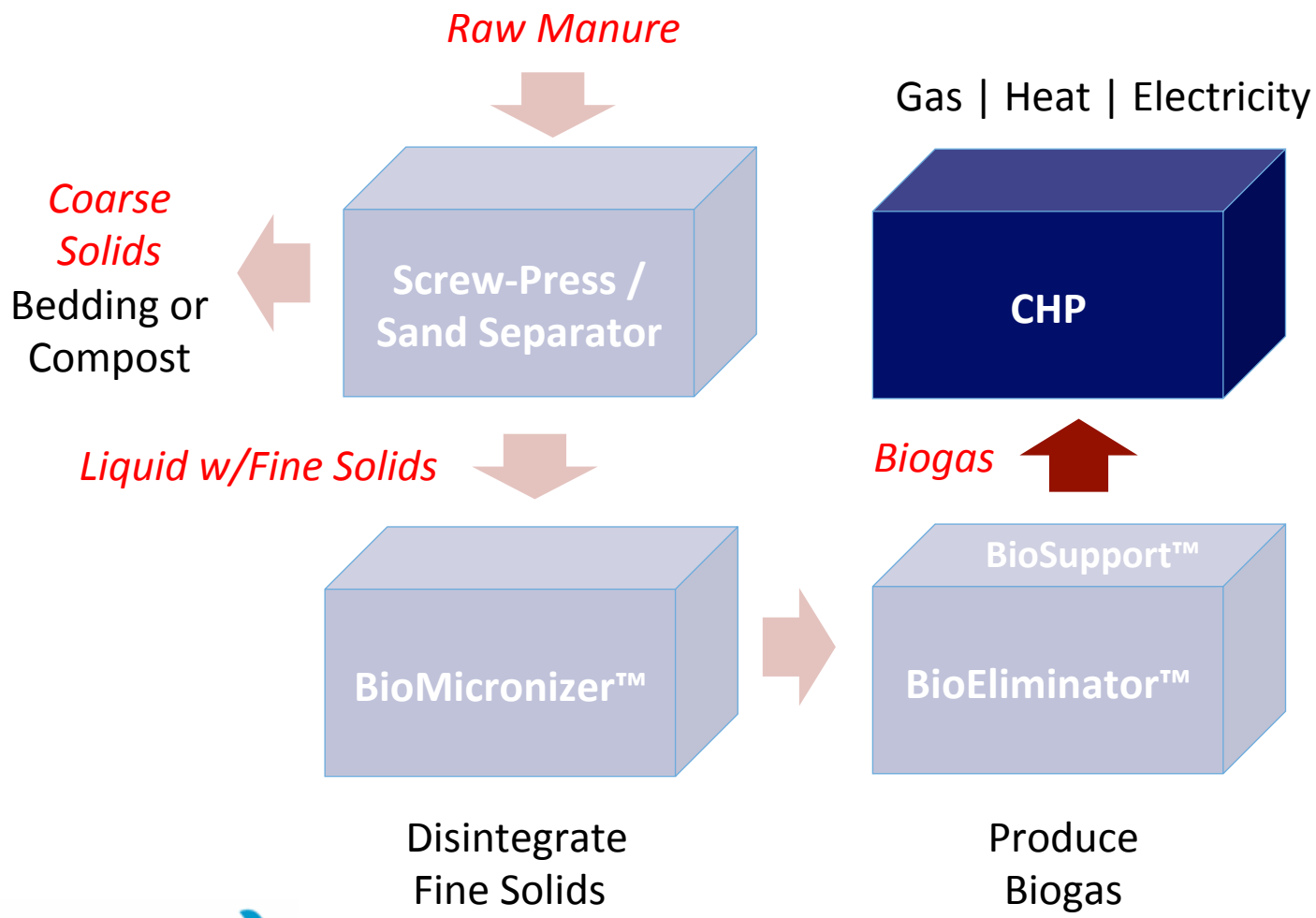
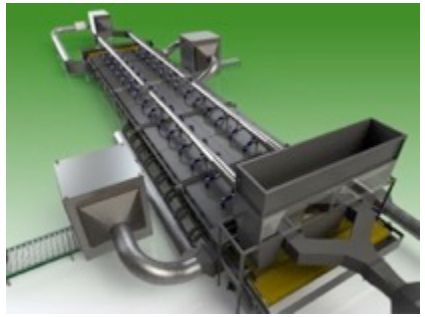
Step #4

Combined Heat and Power for the Farm





- Heat and electricity for BioEliminator/barns/farm
- Gas for drying solids/feed
- Electricity for NCWR

Step #5

Nutrient Concentration & Water Reclamation (NCWR)

Raw Manure

Gas |Heat | Electricity

Coarse Solids
Bedding or Compost

Screw-Press / Sand Separator

CHP

Fine Solids

Biogas

Ultrafiltration | RO | IONEX | UV

BioMicronizer™

BioSupport™
BioEliminator™

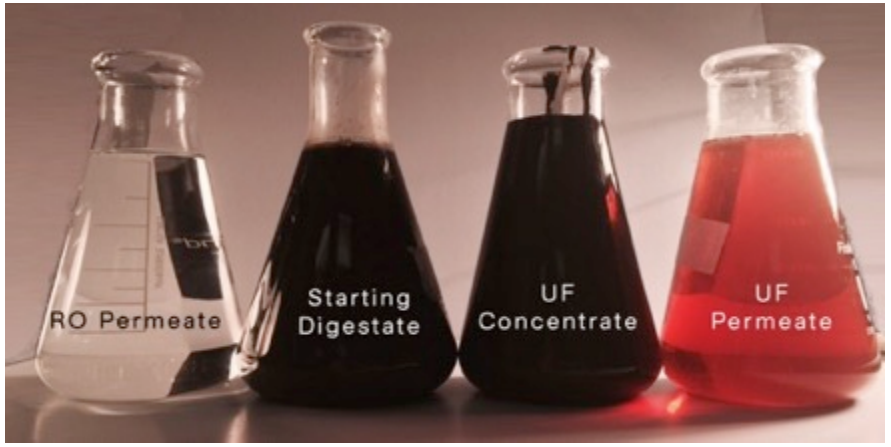
NCWR™

Nutrients
(~40%)

Disintegrate Fine Solids

Produce Biogas

Clean Water
(~60%)



Samples from processing dairy manure digestate

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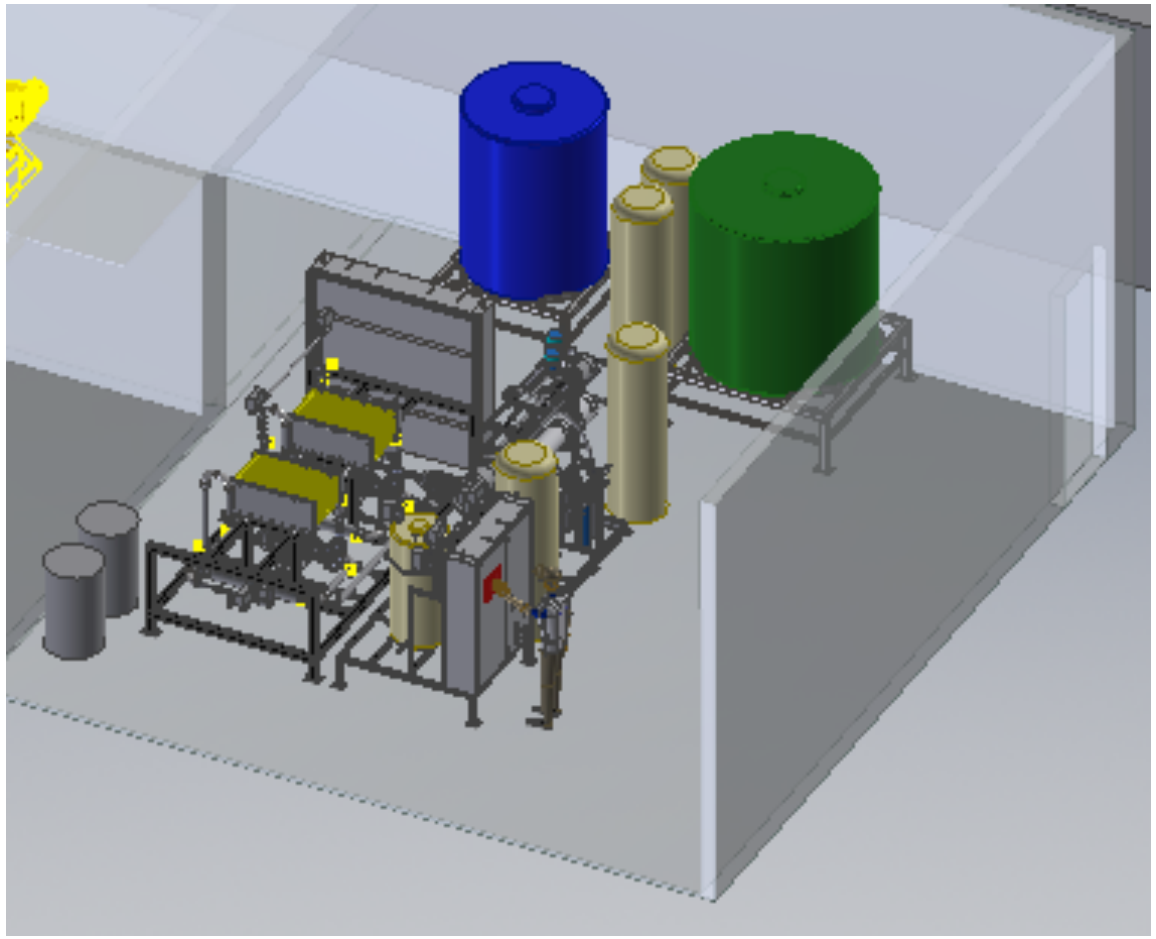
Nutrient Capture & Water Reclamation (NCWR™)

Unique Competitive Advantages:

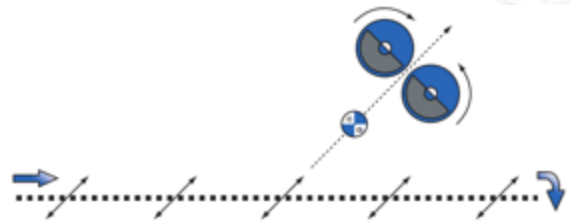
- 26 years of commercial filtration experience
- Easy bolt-on addition to any existing digester
- Integrated + fully automated 5-step process to produce reusable water:
  - ✓ Screening
  - ✓ Ultrafiltration (UF)
  - ✓ Reverse Osmosis (RO)
  - ✓ Ion-Exchange (ION-EX)
  - ✓ Ultraviolet Disinfection (UV)
- **Uses no polymers, flocculants or coagulants**
- **Guaranteed 60% volume reduction at less than your current costs to haul and spread**
- Comprehensive service plan available to cover all operational expenses besides electricity



20,000 GPD NCWR System

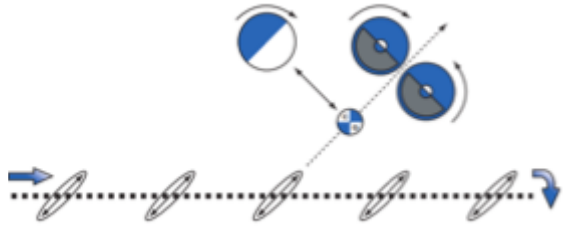
Step #5A: Screening

- Continuous filtration at ~100 microns
- Capable of high flow rates
  - ✓ One unit this size can handle up to 150,000 GPD
- Uses a combination of linear and elliptical motion to separate solids from the digestate and move them off the screen
- Stainless steel contact surfaces for excellent corrosion resistance
- Automated self-cleaning cycle
- <u>Requires little/no maintenance</u>



Linear Motion

- Increases g-forces
- Speeds conveyance
- Enables separator to process heavier solids loads



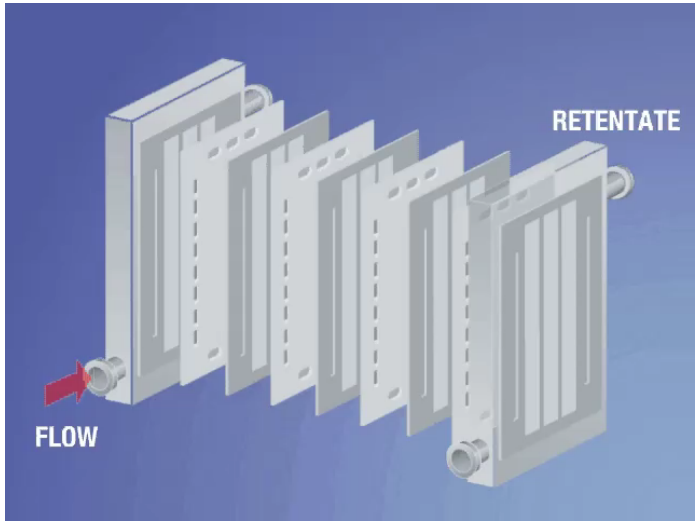
Elliptical Motion

- Reduces g-forces
- Optimizes solids removal
- Maximizes liquid throughput
- Extends screen life

Step #5B: Ultrafiltration

- Patented geometry permits digestate to travel throughout the filter module evenly in parallel channels, increasing filtration rates
- Filter modules are sandwiched between stainless steel holders
- Filter modules are replaced as needed every 1-2 years in a simple switch-out procedure (1 day or less); the holder lasts 20+ years.
- System automatically cycles through cleaning process when filtration rate drops below set point
- Proven technology—hundreds of systems with this design have been installed worldwide

250,000 GPD System



Filter module

Holders

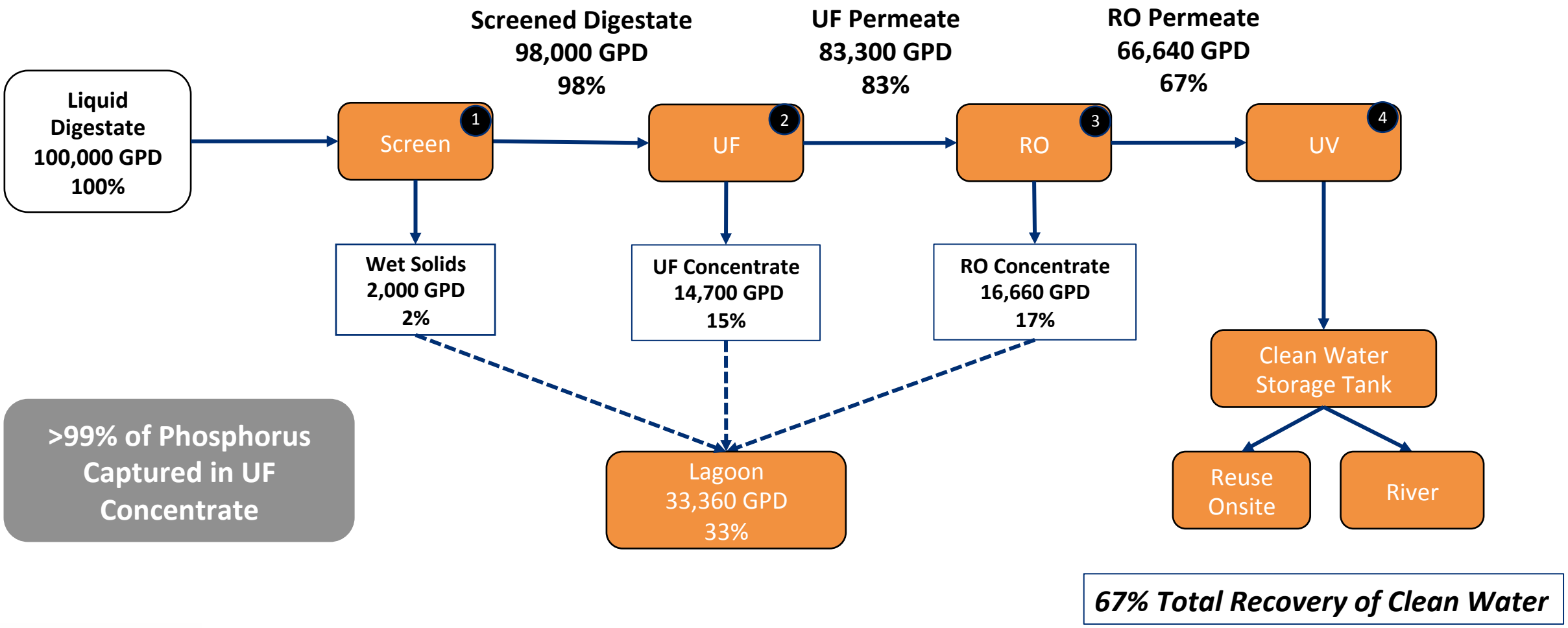
Step #5C: Reverse Osmosis | Ion Exchange

- Spiral membranes filter the UF permeate
- Single or dual-stage systems available depending on final effluent requirements
  - We can assist with discharge permits!
- Automatically cycles through cleaning process when necessary
- Low maintenance and long-lasting membranes (replaced every 4-6 years)

Step #5D: Ultraviolet Disinfection

- Simple in-line system for disinfection
- Low operating costs and energy consumption
- Very little regular maintenance besides bulb changes once per year
- May be unnecessary depending on final use of RO permeate water

100,000 GPD Example



IMMS Characteristic Analysis

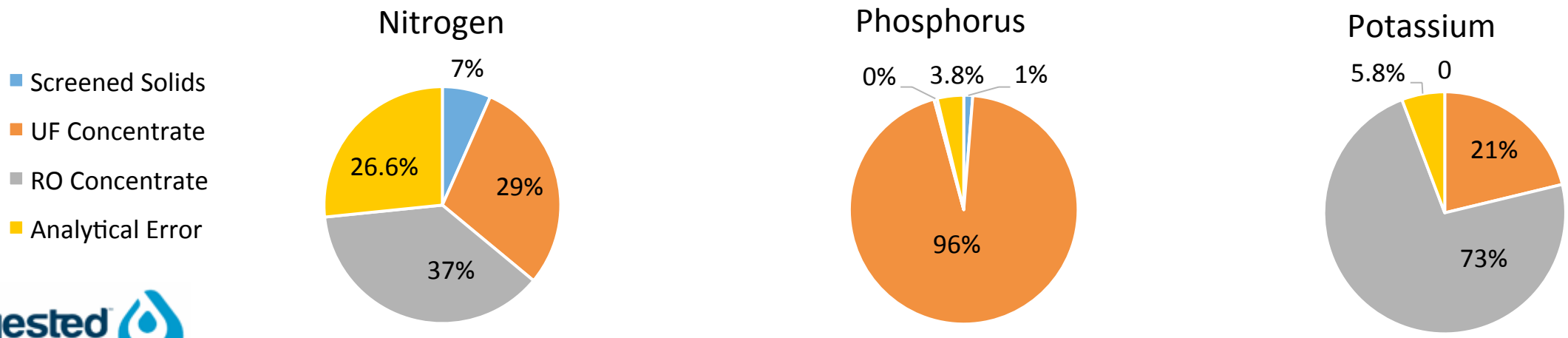
Composition (lbs. per 1000 gallons)

Material	N	P2O5	K2O
Digestate	9	4	18
Screened Solids	28	3	N/A
UF Concentrate	17	29	25
RO Concentrate	19	0	76

Final Treated Water (mg/L):

Parameter	Analysis
TN	≤2.0
TP	≤1.0
TSS	≤5
BOD	≤5

Nutrient Partitioning (% of nutrients in starting material shown)



Majestic Crossing Dairy

Harvest Energy | Capture Nutrients | Reclaim Water

Sheboygan Falls, WI

- Awarded February 23rd, 2015
- Full integrated/automated IMMS will process 20,000 GPD manure
- Coarse solids removal for bedding and/or compost
- **BioEliminator™** treatment system for energy recovery and nutrient capture
- **Nutrient Concentration & Water Reclamation** System (NCWR™)
  - ✓ 60% pure water for farm re-use and/or discharge
  - ✓ 40% concentrated nutrients for targeted land application
- Start-up: September 29, 2015
- Tours available upon request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Integrated Manure Management System™

The Digested Organics Leadership Team

- **Bobby Levine**, Ph.D., CEO
- **Christopher Maloney**, COO
- **Matthew Biette**, Business Development (Vermont)
- **Don Heilman**, Business Development (Wisconsin)
- **Shane Mathis**, Project Management, R&D (Wisconsin)




- **Jeff Polenske**, *Tilth Agronomy,* Senior Advisor, Nutrient Management

  Jeff is recognized as one of the top agronomists in Wisconsin. With over 50 years of combined experience, Tilth Agronomy provides comprehensive nutrient management planning and a host of other technical and consulting services to over 200 dairies in Wisconsin.

- **David Schmidt** – *CG Solutions*, Engineering/Installation/Operations/Service

  Founded in 1920, CG Schmidt is a Wisconsin based engineering, construction and operations company. A family owned business, CGS has a reputation for excellence and uncompromising execution. Their CG Schmidt Solutions Group is also a regional leader in managing and operating anaerobic digestion based WTE facilities.

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USA Offices:

Ann Arbor, Michigan
Lake Forest, Illinois
Milwaukee, Wisconsin
Middleton, Wisconsin
Middlebury, Vermont

dba DAIRY BUSINESS ASSOCIATION

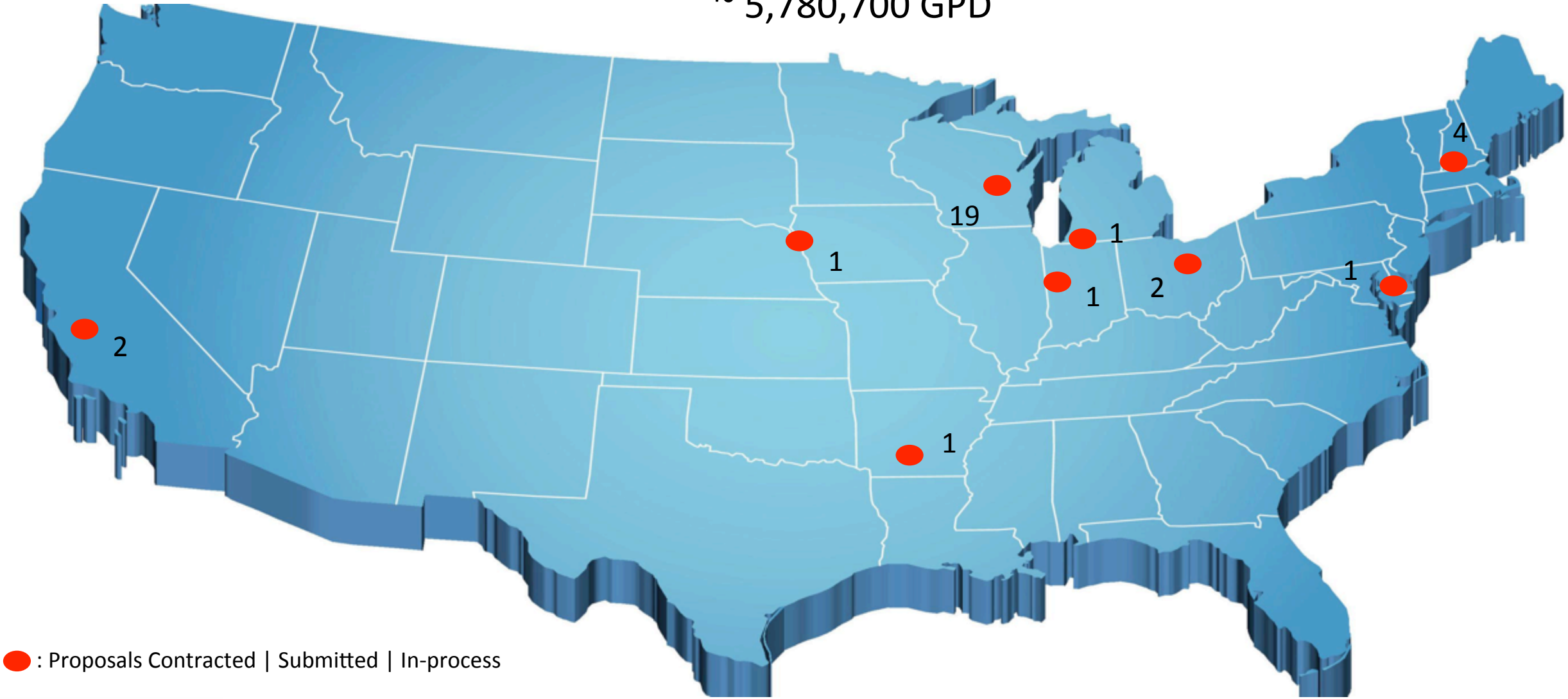
American biogas Council MEMBER

For more information or to request a quote, please contact: 1-844-9-DIGEST
http://www.digestedorganics.com

Appendix

Digested Organics | US Project Pipeline

~ 5,780,700 GPD



: Proposals Contracted | Submitted | In-process

Industry Partners & Associations

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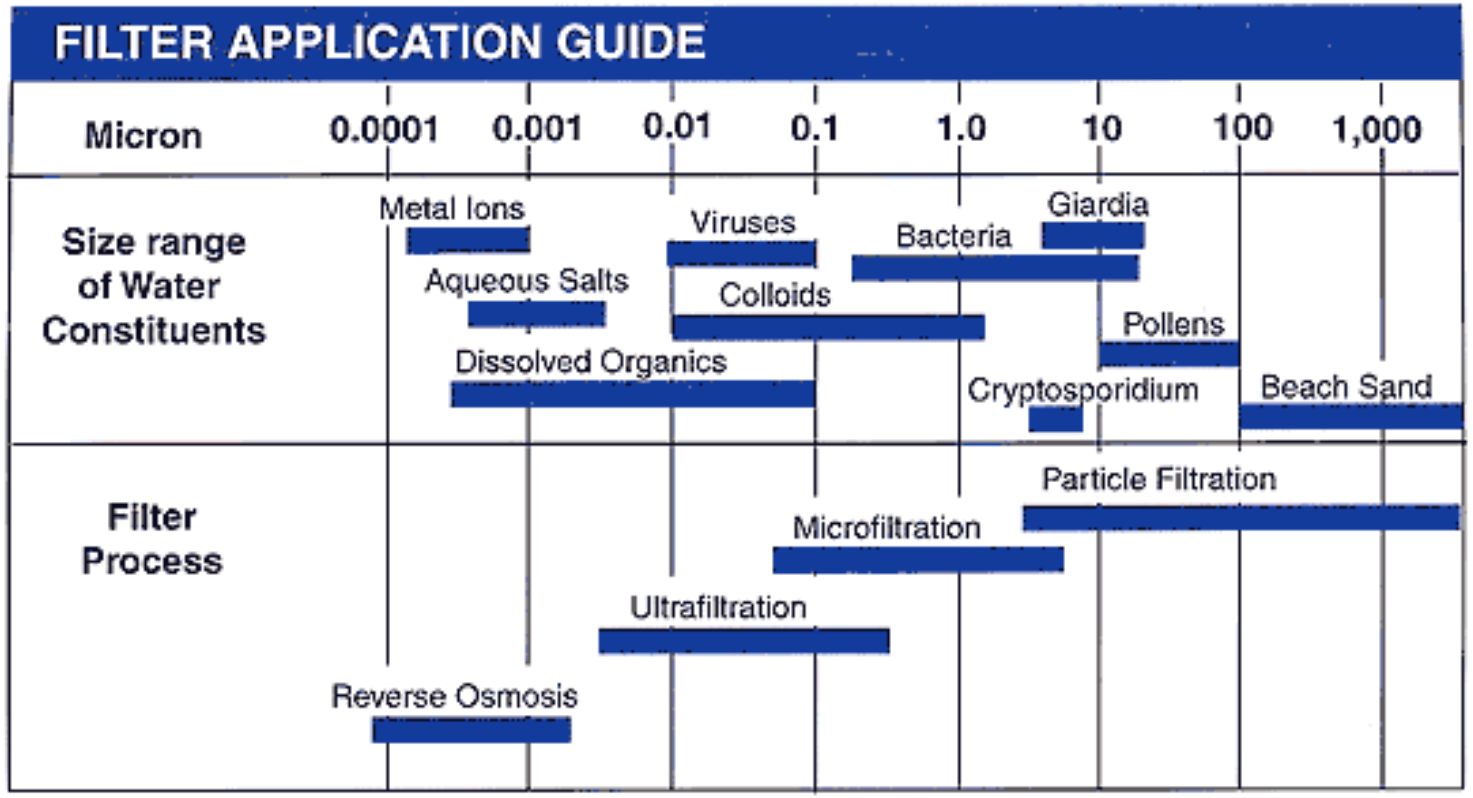
Separation by increasingly smaller pore size...

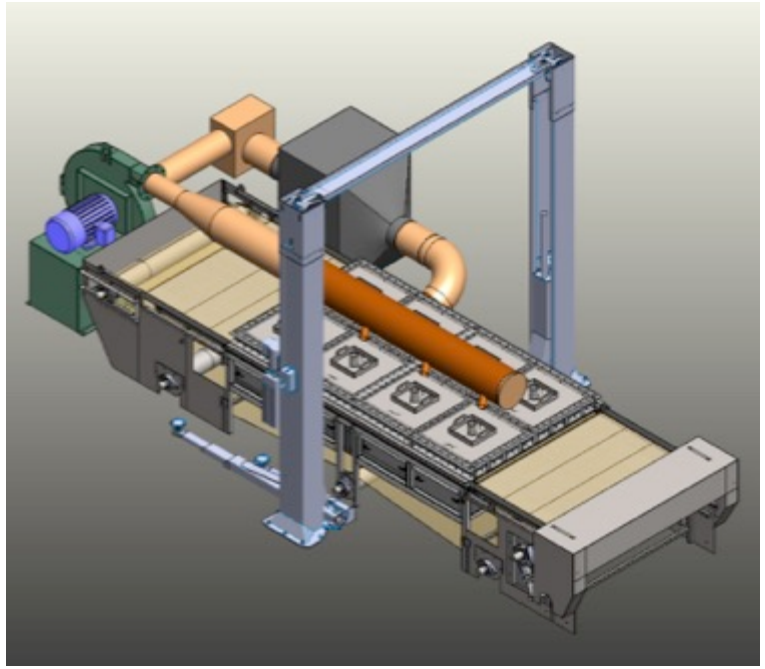
Lowest CAPEX/OPEX per gallon processed in the market today

- **Screen**
  - 100 microns
- **UF**
  - 0.001 microns
- **RO**
  - <0.0001 microns



Dryer add-on to produce fertilizer

- The UF concentrate is about 20-30% total solids and can be dried to <10% moisture to produce a slow-release fertilizer rich in nitrogen and phosphorus.
- We utilize a high efficiency belt dryer to produce a flake material (can run on electricity, natural gas, propane, or biogas)
- Based on typical fertilizer prices, product worth about $115/ton.



Parameter	Content (%)	Value ($/lb.)	Value ($/ton)
Total N	4.47	0.57	$50.96
P2O5	2.72	0.65	$35.36
K2O	1.89	0.38	$14.36
S	0.88	0.8	$14.08
		TOTAL→	**$114.76**