

Say Hello to Pearl Fx.

Ostara Introduces New Modular, Scalable Technology
Reimagining Resources with New Industry
Innovations



Prepared For:
WEFTEC 2019, PRESS KIT
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Ostara Boilerplate & Background



Imagine If Feeding the World Also Meant Protecting It.

Reimagining resources since 2005.

Ostara's nutrient recovery technology helps communities and companies around the world clean water and grow more food.

We recover valuable nutrients from where they shouldn't be – in wastewater – and transform them into high-performing sustainable fertilizers, proven to increase yields while reducing runoff.

Say Hello to Pearl Fx

Ostara Introduces New Modular, Scalable Technology Responding to Market Demands

Vancouver, BC, CANADA, September 21, 2019 – Ostara Nutrient Recovery Technologies Inc.'s ("Ostara") new modular Pearl Fx technology brings flexible, value-driven options to nutrient recovery market. In December 2018, Ostara acquired the assets of Multiform Harvest Inc. ("MFH"), and working alongside Dr. Keith Bowers, President & CTO and co-founder of MFH, adapted the acquired technology, fully integrating it into their technology suite with new market leading benefits.

Say Hello to Pearl Fx

Ostara's newest optimization, Pearl Fx, provides customers with a low capital, modular solution, allowing Ostara to scale their offering to meet site specifications and market demands.

Pearl Fx Features and Benefits – A Simple, Lower Capital Option

- Simplified design
 - Optional recycle, single pass reactor
 - Reduced instruments and controls architecture
 - Recovering for reuse with reduced product handling
- Modular delivery (pre-plumbed & prewired skids, set on a slab, connected with flanges)

Adding to Ostara's full technology suite, Pearl Fx responds to market demand from smaller cities, with populations under 200K, treating 10-20 millions of gallons of water per day and larger facilities looking for modular, value-driven options while still recovering nutrients for reuse. Further offsetting capital costs, Ostara's flexible financing and cost-competitive offering also guarantees a fertilizer buyer for recovered nutrients, creating a revenue stream for utilities, in addition to the savings from reduced maintenance and chemical costs, and sludge volume reduction. "We're continuing to innovate and reimagine resources," says, Matt Kuzma, VP of Sales, Nutrient Recovery Solutions at Ostara. "Ostara supports the contribution every city can make to solving global nutrient issues by providing an outlet for recovered nutrients alongside industry leading operational, economic and environmental benefits to maximize our collective impact on phosphorus sustainability."

WEFTEC MEDIA CONTACT: Matt Kuzma E mkuzma@ostara.com M (206) 419-1993

GENERAL MEDIA CONTACT: Patricia Benton E pbenton@ostara.com



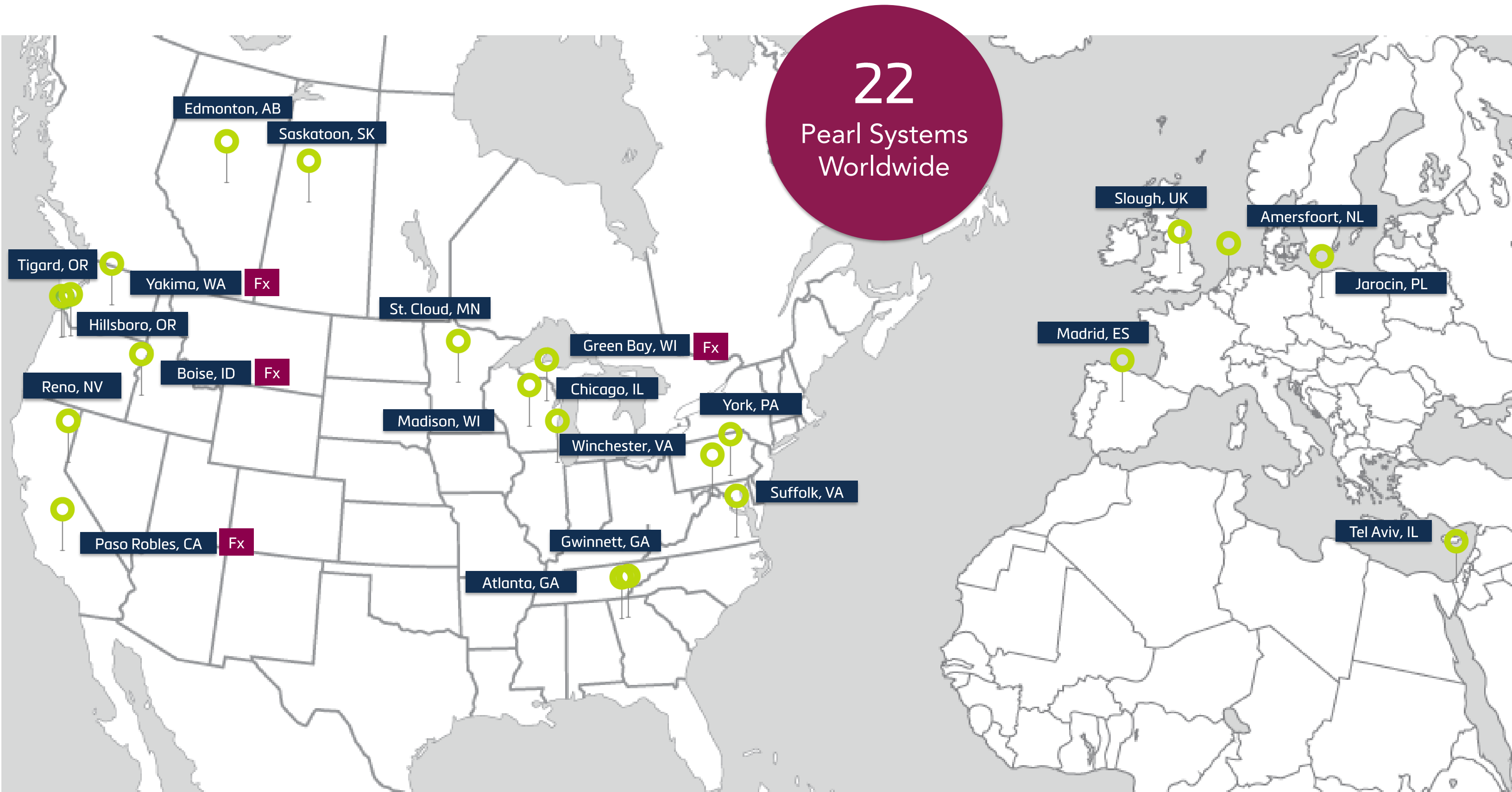
For more information visit Ostara at
WEFTEC Booth 6843



The Multiform Harvest Acquisition

In December of 2018 [Ostara acquired the assets of Multiform Harvest Inc.](#), adding new installations and adapting the acquired recovery technology to introduce a new model, competitively expanding the Pearl technology offering.

Pearl Nutrient Recovery Increased Global Footprint

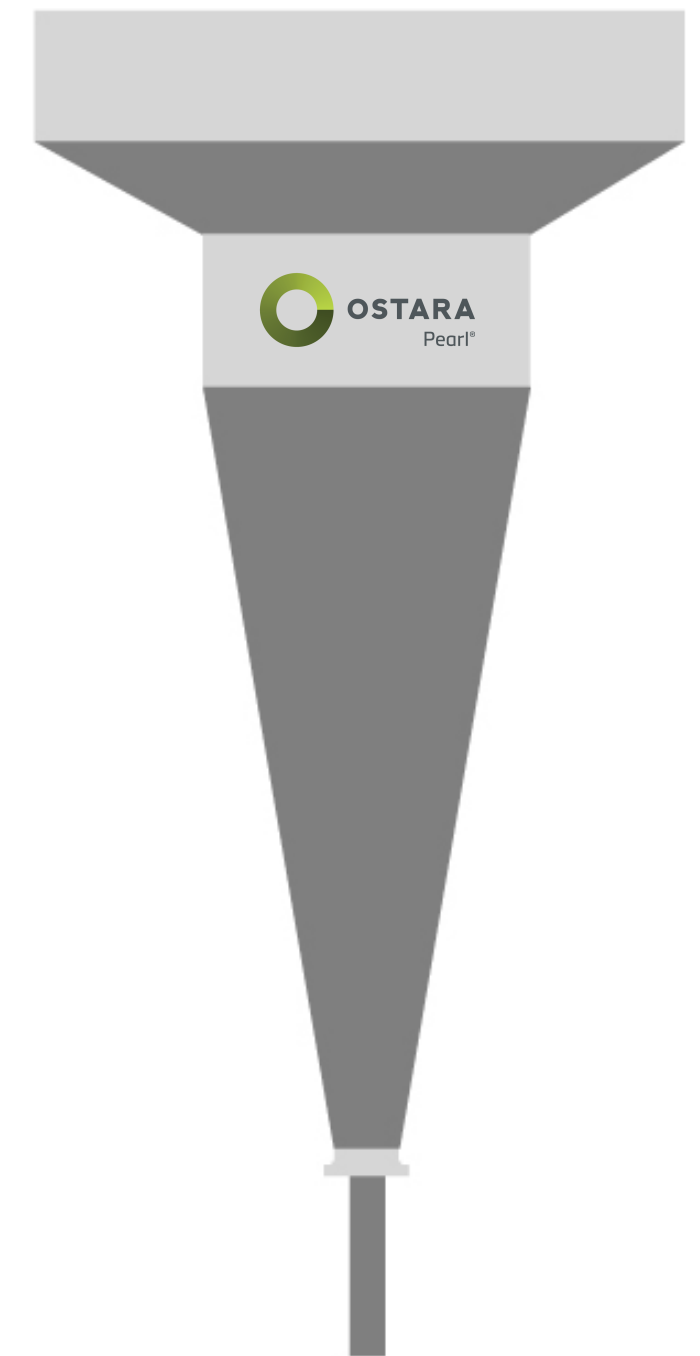


Say Hello to Pearl Fx

Introducing Ostara's newest optimization: Pearl Fx. The Fx model provides customers with a low capital, simplified, modular solution, allowing the offering to scale to meet site specifications and customer demands.

Main Features and Benefits – Simple, Lower Capital Option

- Simplified design
 - No recycle single pass reactor
 - Reduced instruments and controls architecture
 - Reduced product handling (unclassified product is processed offsite by Ostara)
- Modular delivery (pre-plumbed & prewired skids, set on a slab, connected with flanges)

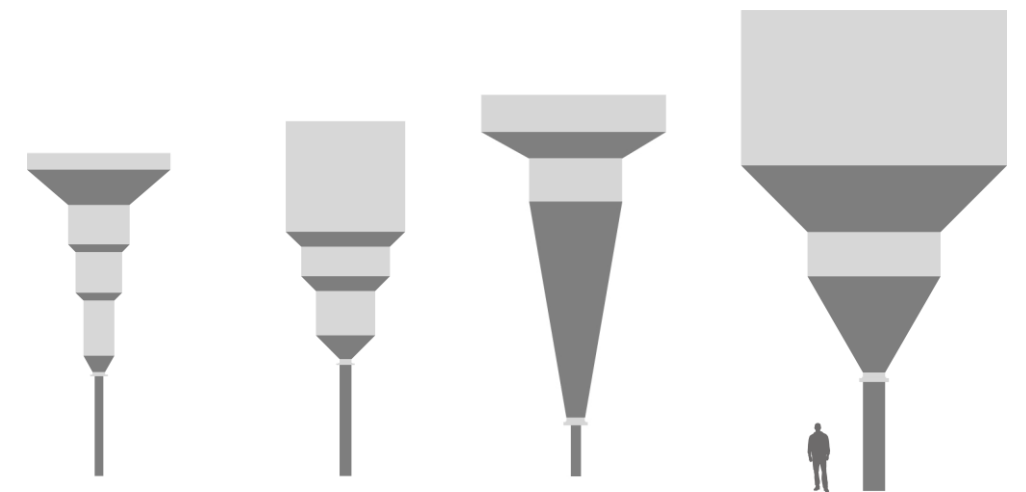


Ostara's Full Suite: A Flexible Technology Offering

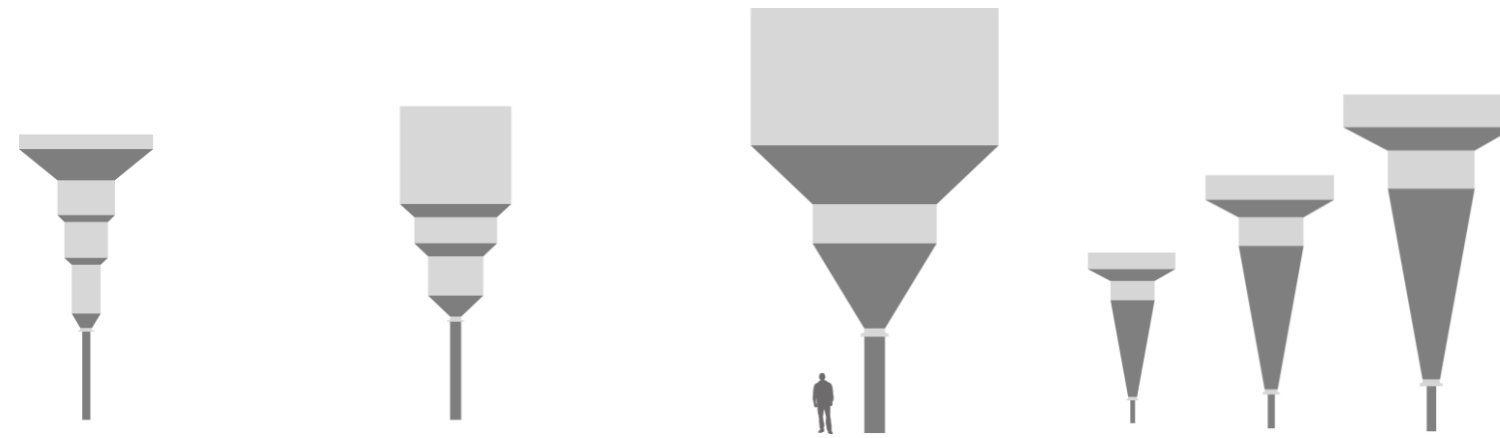
Feature Models: Pearl 500, 2K, Fx, 10K

Scalable Technology, Market Leading Benefits:

- Customizable options varying flow & P concentrations
- Modular designs for easy installation
- Competitive, capital-reduced offerings
- Guaranteed fertilizer purchase
- Flexible financing options
- Industry leading operational benefits



Technical Specification Comparison



Current Fx Reactor Sizes (@ 200 mg/l P):

- 6' top ø = 70 lb/d
- 9' top ø = 300 lb/d
- 12' top ø = 525 lb/d

	P500	P2K	P10K	PFX
P Concentration (mg/l PO₄-P)	> 50	> 50	> 50	50 – 400
Load Capacity (lb/d PO₄-P)	145	550	2,750	140 – 1,050
Hydraulic Capacity (gpm)	<343	<1,370	<5,940	18-250
Average Production Capacity (CG tons/year)	130	500	2,500	65 – 475
CG Product Size (SGN)	90+	90+	90+	<35

Paso Robles, CA – 3 MGD facility

6' Ø Modular Pearl Fx Delivered in January 2019 (commissioned in April)



Modular Pearl Fx Integrates with Simplified Fertilizer Handling



- Compact circular fluidized bed dryer
- Operational by Ostara at Slough (UK) since 2010
- Adapted with dust collector for smaller product

- Dried fertilizer direct to supersack
- No size sorting required
- Silo storage not needed in most cases



About Ostara





Boilerplate:

Ostara reimagines resources, helping communities around the world clean water to grow more food.

The company's Pearl® technology recovers phosphorus and nitrogen from industrial, agricultural, and municipal wastewater streams, then transforms the nutrients into premium, sustainable fertilizers.

Crystal Green, Ostara's signature crop nutrition innovation, is the first slow-release phosphorus fertilizer to release nutrients in response to plant demand. The Root-Activated™ granule (5-28-0 with 10%Mg), sold into the agriculture and turf sectors, is proven to increase yield and significantly reduce phosphorus tie-up and runoff, improving food security while protecting local waterways from nutrient pollution.

To learn more about how Ostara is closing the loop on phosphorus, visit [ostara.com](https://www.ostara.com).

Ostara Positioned to Capture Global Growth

With Ostara, our partners join a network of thought-leaders reimagining resources. Our patented technology makes the circular economy a reality, reclaiming nutrients so we all benefit environmentally, agronomically and economically.



Award Winning
Industry Leader
est. 2005



Regional Results,
Global Impact



Unique Value-Added Crop
Nutrition Portfolio



Local Renewable P
Production



Trusted Water
Treatment
Technology



Experienced
Collaborative Team

Our Solution is Circular

By recovering one precious resource to protect another, we help communities & industries around the world clean water to grow more food.



- 1** **Renewable P Source**
Used water streams are rich in nutrients, but can create costly environmental and operational challenges for the manufactures and municipalities who manage them.
- 2** **Nutrient Recovery**
Our patented Pearl technology solves these challenges plus creates a revenue stream for our clients, offsetting the capital costs of our technology through offtake agreements for recovered nutrients.
- 3** **Sustainable Agriculture**
We sell the nutrients we recover to fertiliser distributors in the agriculture and turf markets as a specialty product, proven to improve crop yield and farmer ROI.
- 4** **Food Consumption**
We promote transparent and traceable supply chains, reduced carbon footprint and ethical sourcing to the benefit of our consumer community.
- 5** **Environmental Impact**
Our fertilizer reduces runoff and improves soil health. Our technology recovers nutrients to prevent them returning to our ecosystem. Our triple bottom line solution closes the loop on phosphorus.

Resources Reimagined

We drive value across the supply chain with sustainable solutions that are transforming the way we feed our planet's growing population, now and for generations to come.

Preserving & Protecting Resources

Through collaborative win-win-win partnerships, we continue to protect, conserve and preserve access to essential resources necessary for feeding our growing population, sustainably.

Creating Value From Waste

We reclaim phosphorus from phosphate production, animal, and municipal process water streams and fully fund and manage the offtake.



Sustainable Solutions

Our experienced team transforms the phosphorus we reclaim into continuous release phosphorus fertilizers, introducing new P management tools to the specialty ag market.

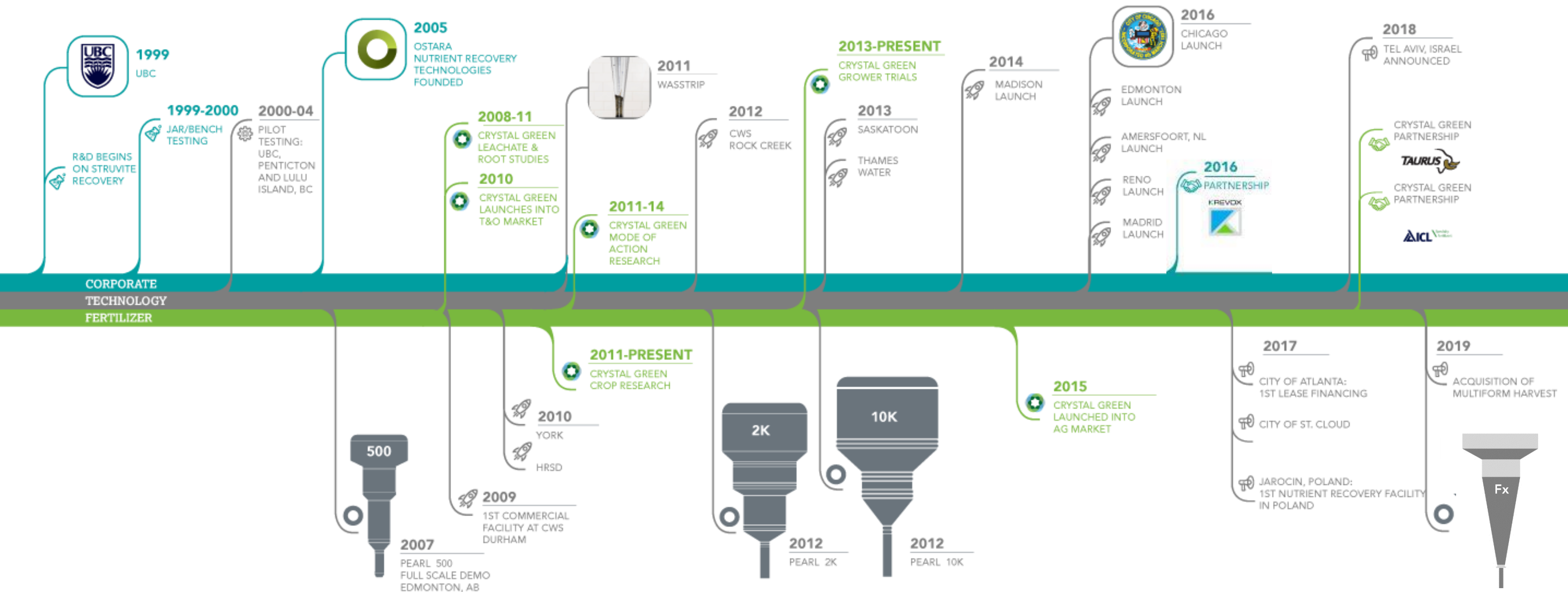
Innovative 4R Crop Nutrition

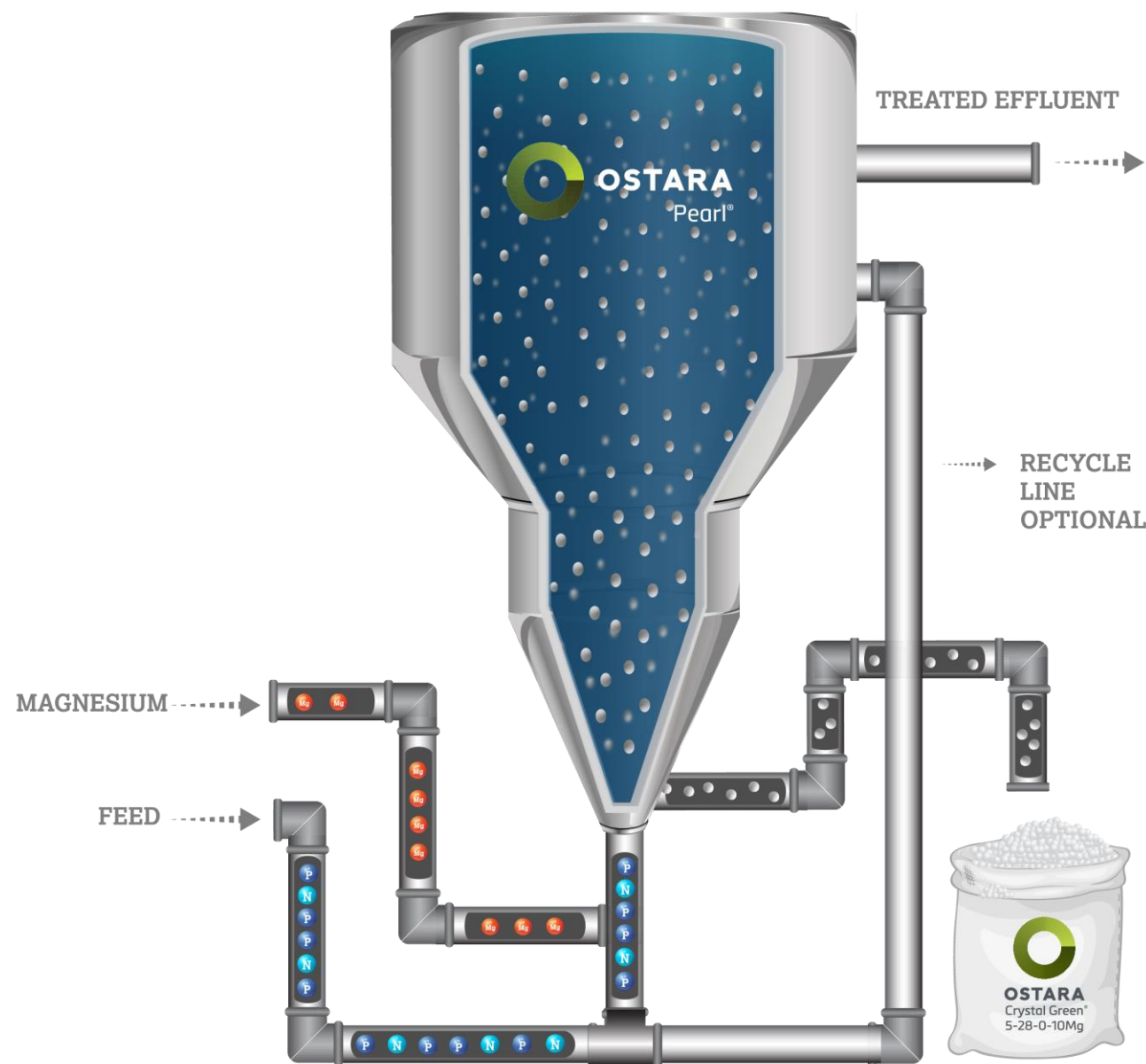
8 years of research globally proves higher yields, reduced nutrient loss to the environment and improved seed safety with a value-driven supply chain that improves farmer ROI.

Our Business, Demonstrated Success

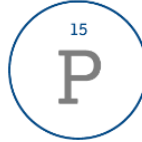






Historical Milestones

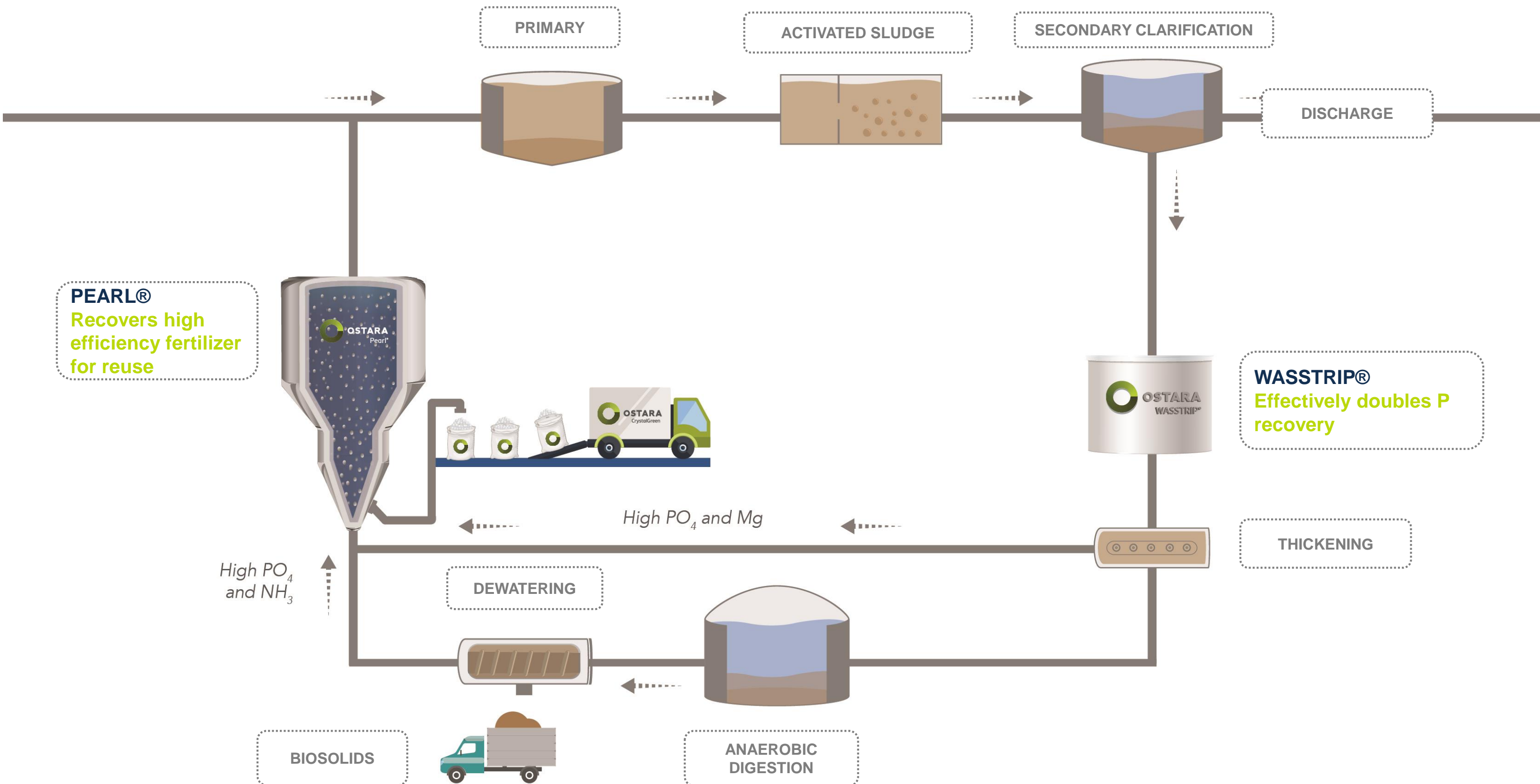




The Standard In Nutrient Recovery

-  Up to 85% of P and up to 40% of N recovered
-  Helps meet P limits
-  Pure, eco-friendly fertilizer ready for turf and agriculture
-  Reduces chemical dependency
-  Revenue-generating offtake offsets operating costs

Pearl[®] + WASSTRIP[®] Process Flow Diagram



Our Sustainability Commitment

Making a global difference to clean water and grow more food.

FOOD SECURITY

Increased food production

Sustainably increase yields, focusing on regions with yield gaps and pH challenged soils.



RESPONSIBLE SUPPLY CHAIN

Traceability, offset tons of carbon

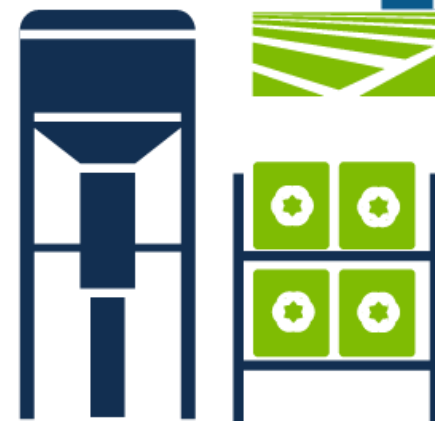
Improve farm-to-table traceability from the source, including reducing carbon footprint for nutrient recovery partners and growers.



SOURCING COMMITMENT

Gallons of water treated

Improve access to nutrient recovery, expanding global footprint in new markets and geographies.



NUTRIENT STEWARDSHIP

Reduce P loss & protect soil health

Expand distribution and integrate Ostara's phosphorus into standard fertility programs to reduce nutrient loss to the environment, and protect soil and water resources, globally.





We are all part of a growing movement
reshaping how we collectively manage our
planet's precious resources.



OSTARA



Ostara Nutrient Recovery Technologies Inc.
690 - 1199 West Pender Street
Vancouver, BC V6E 2R1

info@ostara.com

ostara.com