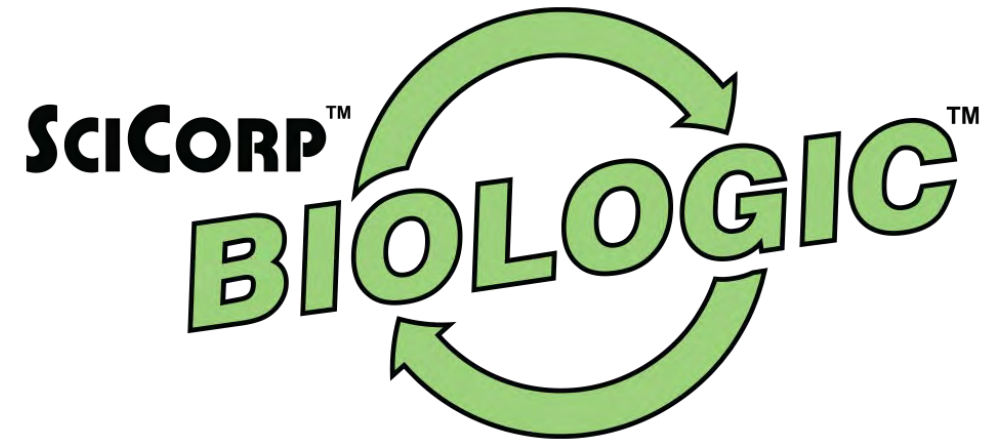




**Preventing Odor and Improving
Wastewater Treatment Performance at
Pulp and Paper Facilities
with Micronutrient Technology**



We Solve Odor!

Take Back Control Of Odors At Your Facility
Increase Plant Capacity / Reduce Operating Costs



About



SciCorp International is located in Toronto, Canada

- Business model based on:
 - ✓ Product manufacturing and supply
 - ✓ Value added engineering customer support and service
- Clients include both domestic and industrial wastewater treatment facilities
- 300% Revenue growth in past five (5) years
- Presence in 25 countries



The Challenge

The Pulp & Paper Industry is under pressure to:

- Improve odor control
- Reduce solids handling and disposal costs
- Increase wastewater treatment capacity
- Reduce environmental impact
- Lower operating costs



BIOLOGIC® SR2

What It Is

- ✓ Proprietary plant-based micronutrients
(not an enzyme or bacterial formulation)
- ✓ Stimulates existing bacterial population in
aerobic/anaerobic systems
- ✓ Simple infrastructure required for application
- ✓ Low dose 2 ~ 10 ppm based on wastewater quality



BIOLOGIC® SR2

What It Does

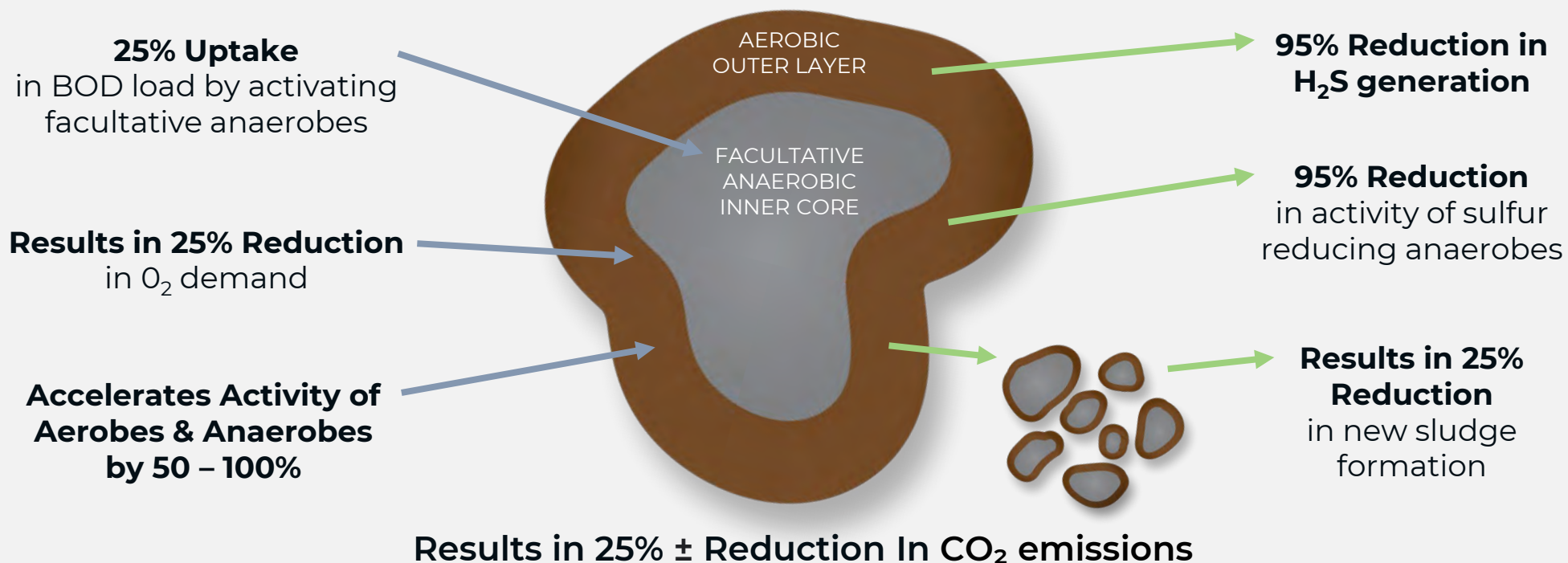
- ↓ Eliminates odors
- ↓ Reduces oxygen demand
- ↓ Reduces biosolid formation
- ↓ Breaks down FOG in sewers and WWTPs
- ↑ Increases plant capacity
- ↑ Improves plant performance
- ↓ Reduces operating costs
- ↓ Reduces CO₂ emissions and carbon footprint



BIOLOGIC® SR2 How It Works

Biological Floc – The biological treatment engine

BIOLOGIC® SR2 Stimulates the Inner Core of the Floc



BIOLOGIC[®] SR2 – Independent Studies



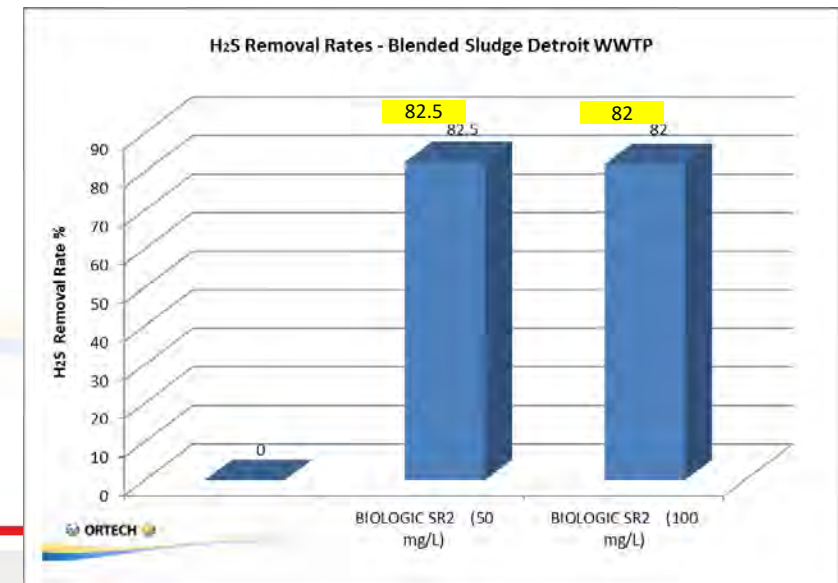
LuminUltra used their wastewater test protocol in two reactors to demonstrate the metabolic benefits of BIOLOGIC SR2 and found the following: *"The benefits of BIOLOGIC[®] SR2 are unmistakable. After 48 hours, the reactor with the recommended dosage reached an active biomass population that was 4 times greater than that of the control."*



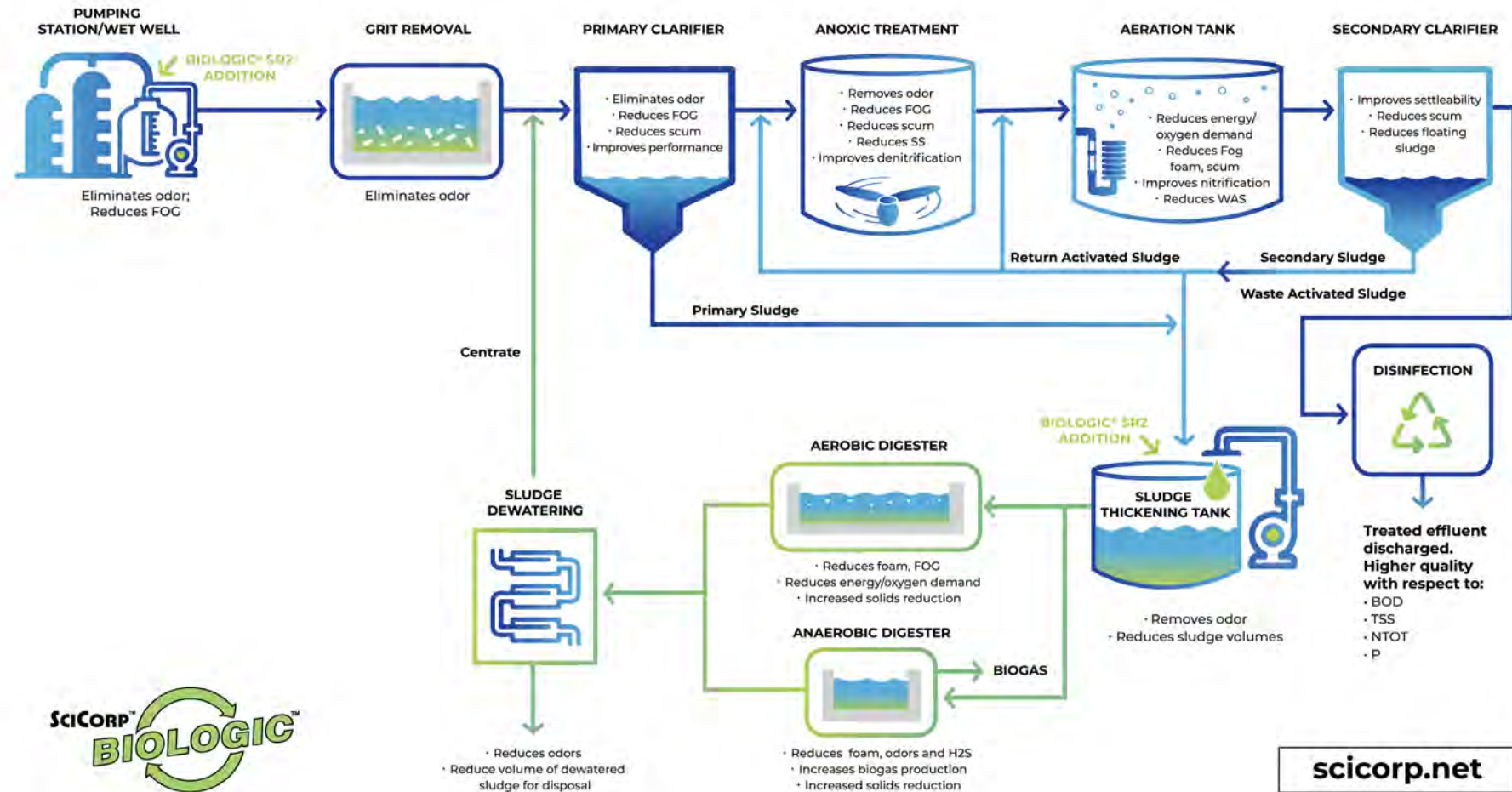
Swedish Biogas: Prior to the addition of the BIOLOGIC[®] SR2 solution the OLR of the reactor could not be raised above 2.00 kg VS/(m³*day) without reactor failure; however, with the addition of the BIOLOGIC[®] SR2 solution, the OLR was raised and maintained at 2.50 kg VS/(m³*day), a 25% increase, without a decrease in reactor health or performance.



ORTECH Consulting Inc., an independent odor consultant conducted lab scale testing of BIOLOGIC[®] SR2 on samples of sludge obtained from a Michigan wastewater treatment facility. The methodology employed included obtaining air samples from the head space of the test containers and measuring those samples using gas chromatograph. The results showed that BIOLOGIC[®] SR2 achieved up to 82% reduction in H₂S generation as compared to the control tests.



IMPACT OF BIOLOGIC® SR2 ON TYPICAL WASTEWATER TREATMENT OPERATING CHALLENGES



BIOLOGIC[®] SR2

Proven Benefits and Scalability: 37 MGD Pulp & Paper WWTP – South America



Success

- 25% increase in WWTP load treatment capacity without increasing aeration
- 35% increase in P removal efficiency
- 10% increase in reactor efficiencies
- 10% increase in COD removal efficiency
- 23% decrease in biosolids wasted (dry basis)
- 98% decrease in odour complaints
- + Significant reduction in carbon footprint and environmental impact

Problems Avoided

- Lost revenue due to decreases in pulp production capacity
- Regulatory enforcement
- Increased operating costs
- Damage to the company brand



INDUSTRIAL WASTEWATER TREATMENT
PULP & PAPER
LARGE PULP MILL IN SOUTH AMERICA (Kraft Pulp)



Increase in load
treatment capacity



Increase in
P removal
efficiency



Decrease in odor
complaints



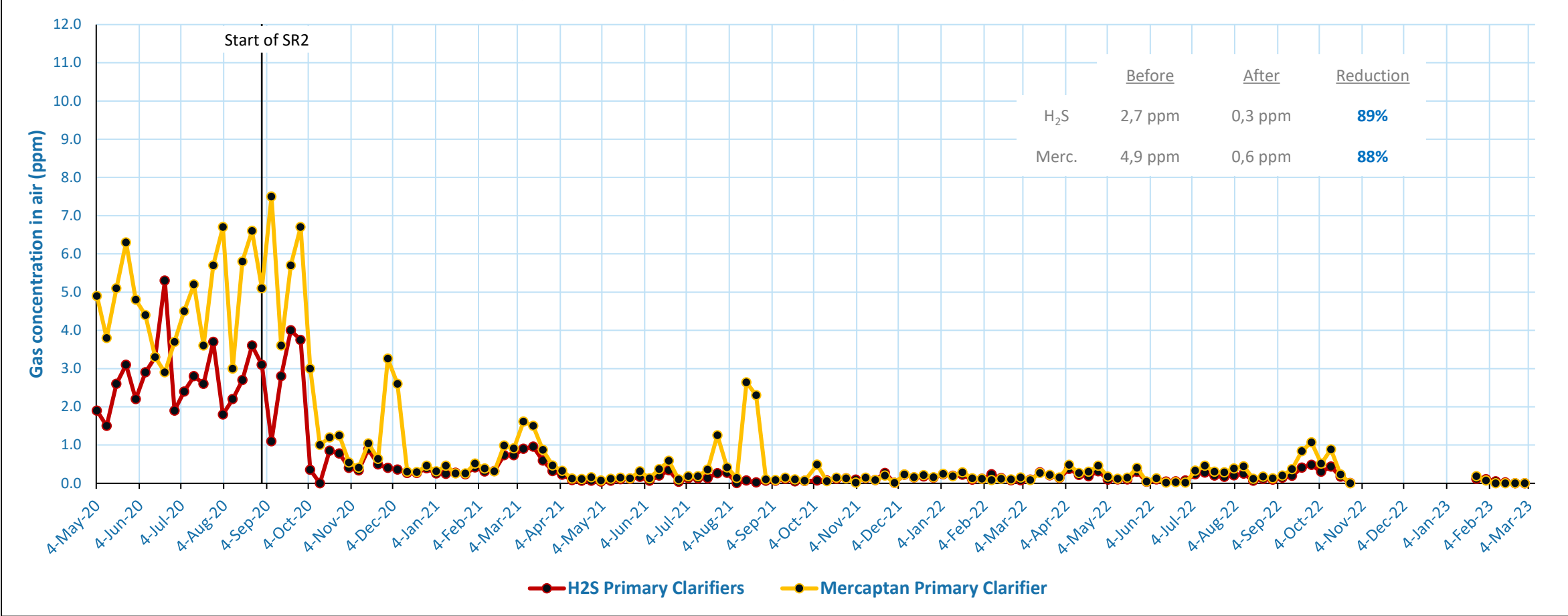
Decrease in
biosolids wasted

BIOLOGIC® SR2 – Case Study



- Electronic nose readings of H₂S and mercaptans dropped by close to 90% following start of SR2 treatment

Figure 2 - Electronic Nose Readings at Primary Clarifiers

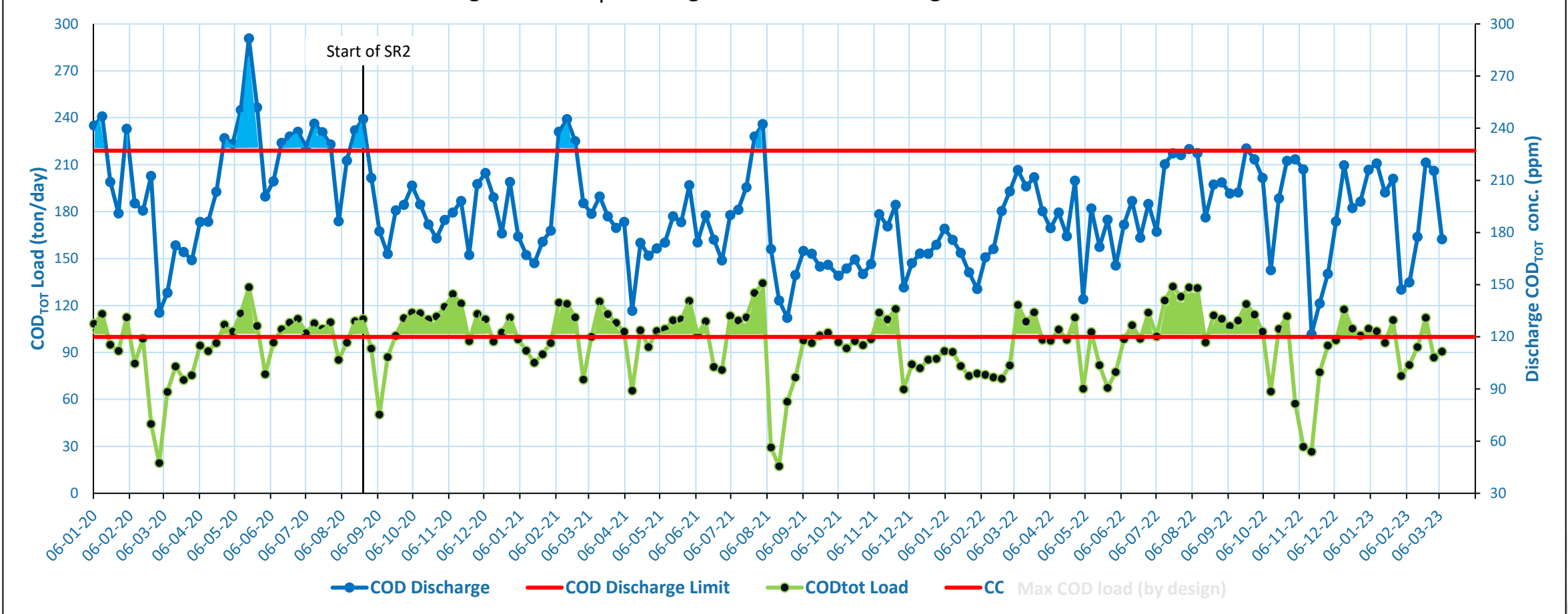


BIOLOGIC® SR2 – Case Study

- Treatment capacity of the plant increased by an average of 25%. Before treatment with SR2 each time the COD load exceeded 120 t/day the effluent COD exceeded the legal limit. After treatment started the plant was able to handle up to 150 t/day without exceeding the legal limit.



Figure 3 - COD_T Discharge Concentrations vs Legal Limit and Load

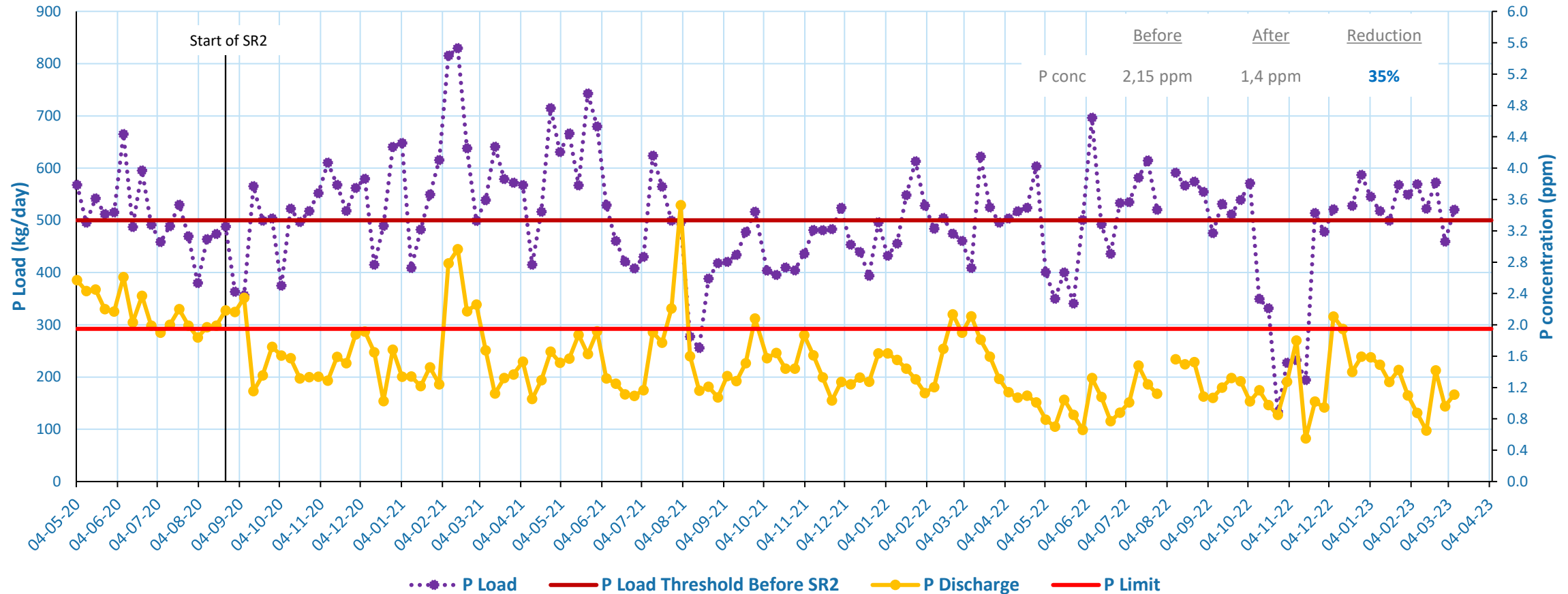


BIOLOGIC® SR2 – Pulp and Paper WWTP

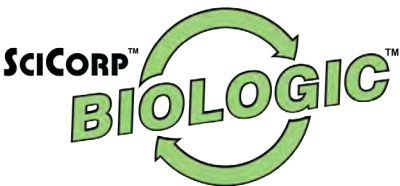
- Before treatment with SR2 each time the plant received greater than 500 kg/day in P load, the plant effluent would exceed the legal limit. Following treatment startup, the plant was able to handle in excess of 700 kg/day in P load.



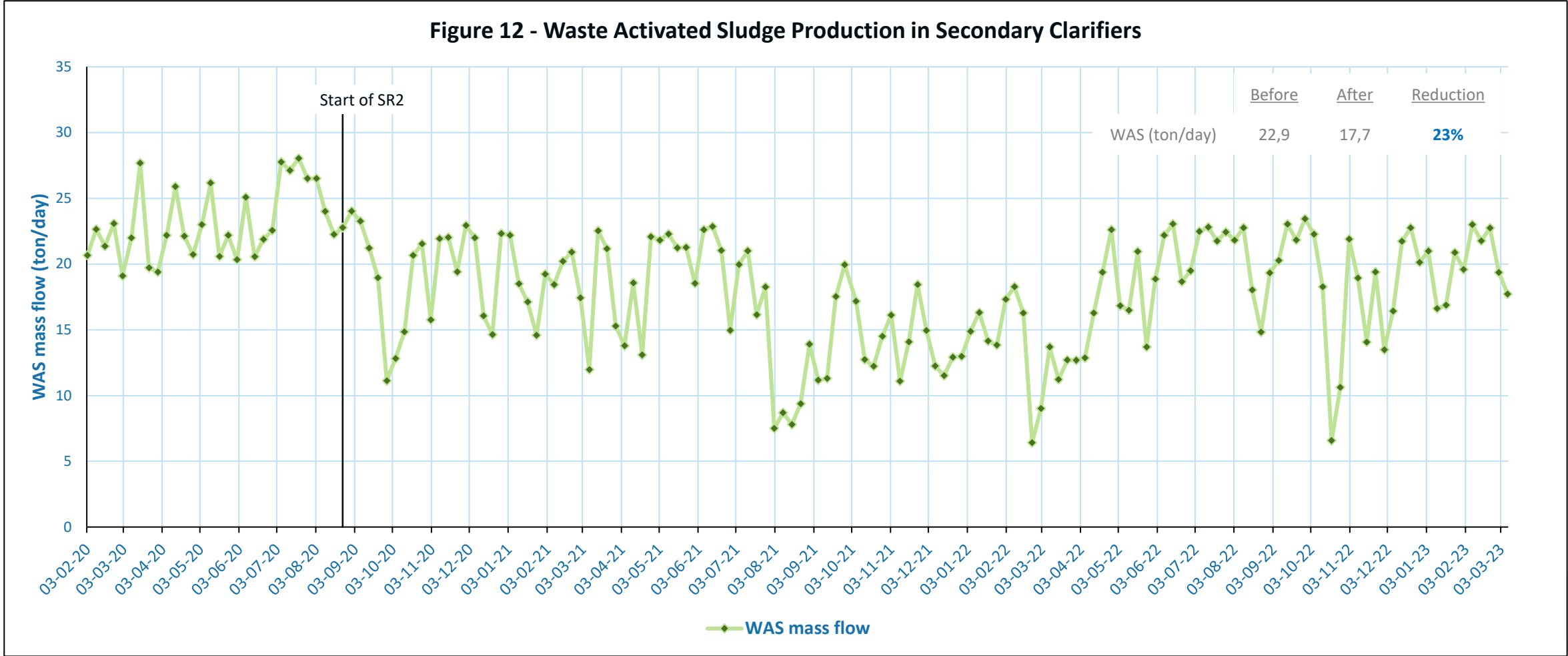
Figure 6 - P Load vs Discharge concentration and Regulatory Standard



BIOLOGIC® SR2 – Case Study



Following start up of treatment with SR2 the plant observed an average reduction in WAS of 23% after accounting for variability in organic loading

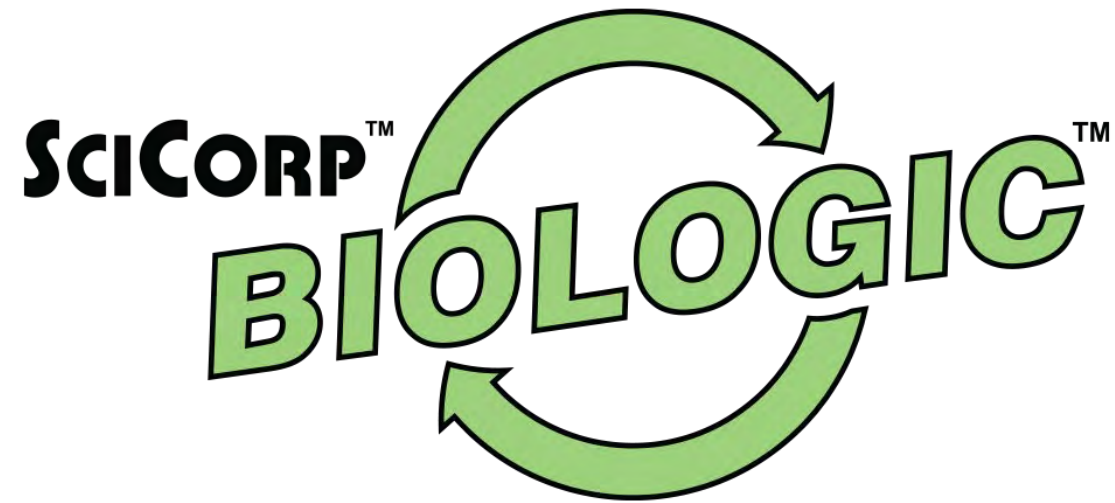


BIOLOGIC[®] SR2

Value Proposition

- ✓ Eliminate odor at source
- ✓ Low cost of implementation
- ✓ Simple and safe to use
- ✓ Extended shelf life
- ✓ Immediate positive return on investment
- ✓ No similar product in market





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Increase Plant Capacity / Reduce Operating Costs

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