

Project Report

Application of Ydro Process® technology in a wastewater treatment plant
Water Resources - Marketing LLP, Shymkent, Kazakhstan

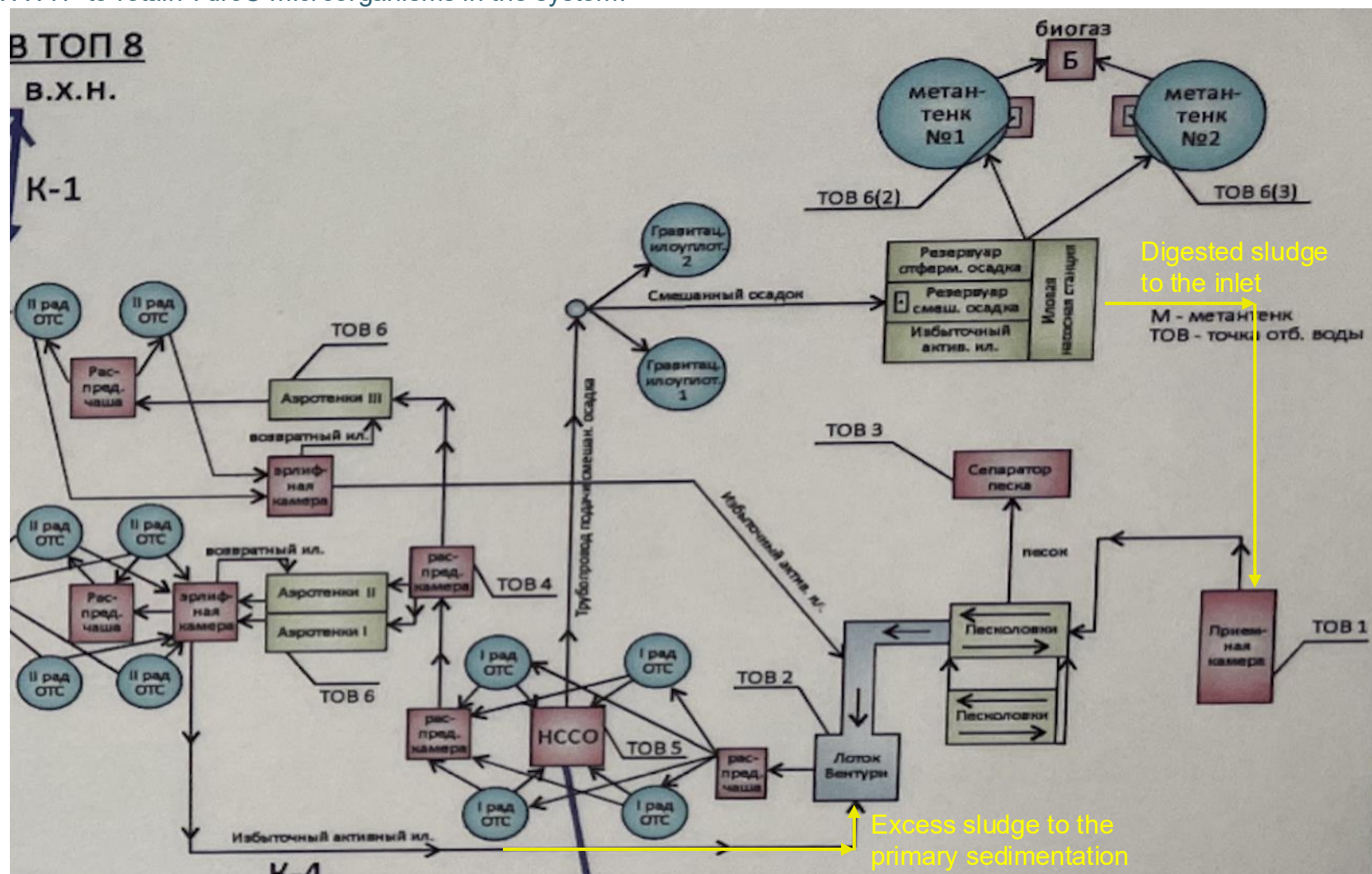
Project customer: UAB "Water Resources - Marketing" LLP

Start of the project: 07.01.2024

Characteristics	Data
Type of Treatment Plant	Classic
Design capacity	200 000 m3/day
Incoming flow per day (average)	150 000 m3/day
*Excess sewage sludge (97.5% moisture, 2024 estimate)	1200 m3/day



For the effective operation of the technology, all excess activated sludge is diverted to primary sedimentation tanks 40-50 m³/h, as well as digested sludge 10-15 m³/h to the inlet of the WWTP to retain Ydro® microorganisms in the system.



Project objectives and requirements



Goals:

Reduction of excess sludge for disposal by 80% or more of the volume produced starting from week 12;

Reduction of costs associated with sludge treatment and disposal: dewatering, drying, transportation, chemicals, landfill gate-fee, etc.;

Elimination of odors and emission of foul-smelling substances at the WWTP.



Requirements:

All excess activated sludge is diverted to primary sedimentation tanks 40-50 m³/h, as well as digested sludge 10-15 m³/h to the inlet of the WWTP to retain Ydro® microorganisms in the system and:

1. Start the activity of bacteria at an early stage of the process, as a result of which organic acids will be produced;
2. Organic acids are degraded during the process to carbon dioxide (CO₂) and water (H₂O) in aerobic conditions and methane (CH₄) and hydrogen (H₂) in anaerobic conditions – as well as to free, available energy;
3. Reduce odors (if any) in this part of the WWTP.

Product features



Our Microbial Products:

Are naturally occurring bacteria



Contain no animal derivatives

Are not genetically manipulated

Include additional strains uniquely tailored to treated waste type

Require a maturation time of approx 16 hours

Each gram of bacterial product contains 10^9 c.f.u

During maturation 10^9 c.f.u. population duplicates every 20 minutes



Require no further chemical analysis when applied

Application process requires no additional financing

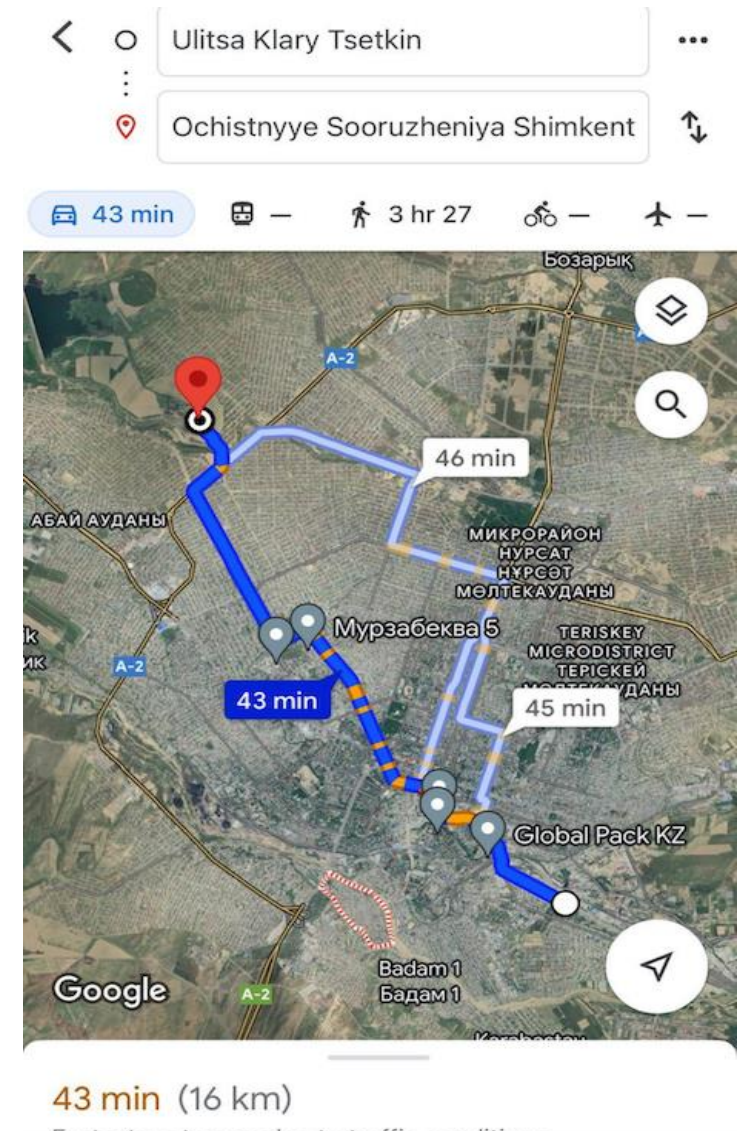
Dosing of Ydro® Microorganisms

Dosing of microorganisms is carried out in the pipeline, 3 kg/day, and in the aeration tank (distribution chamber) 3 kg/day, (the first 30 days a double dose is used - 12 kg/day);

In 2025 Ydro-20 q-ty is 9 kg/day (due to increasing load).

Dilution ratio 1:10, i.e. up to 1 kg of product per 10 l;

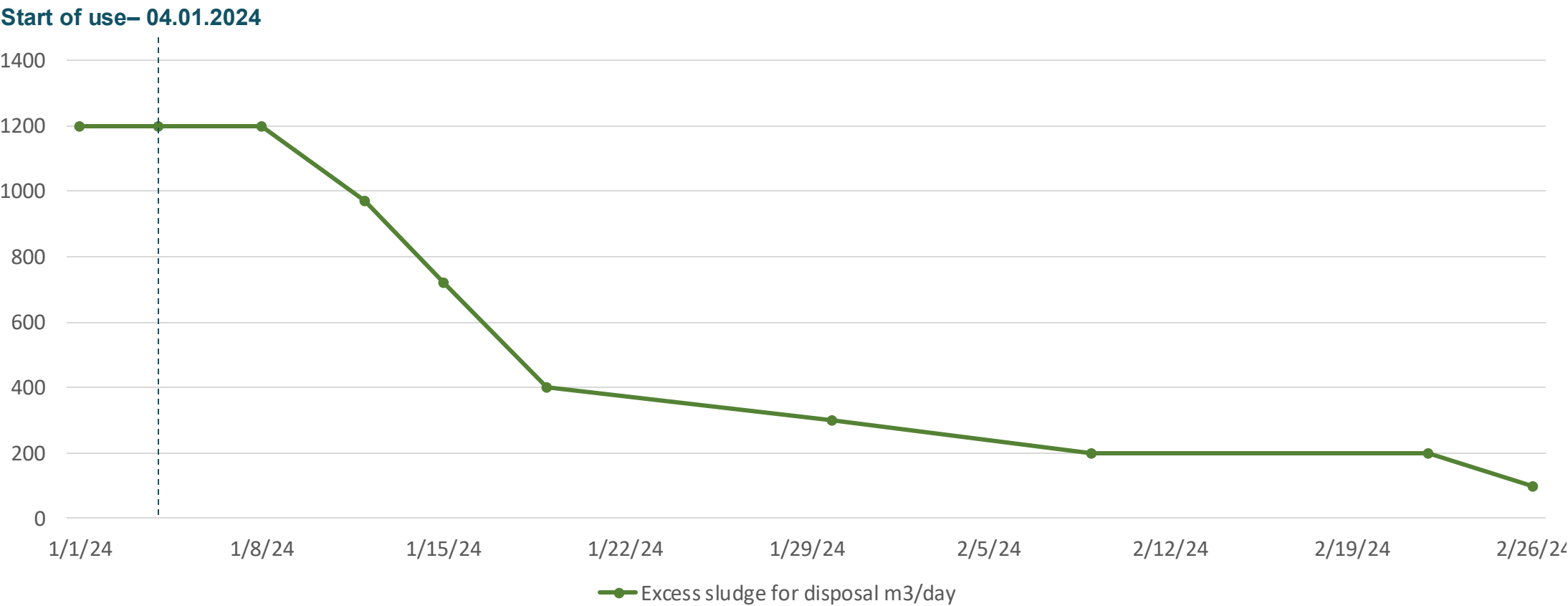
The maturation time is at least 12 hours, which can be increased to 24 hours depending on the availability of personnel;



Reduction of excess sludge for disposal



By the 8th week of application of the Ydro Process®, the excess sludge for disposal is reduced by more than 80%.



SVI and sludge blanket



	SVI / иловый индекс, и доза ила					
дата/date	Аэротенк No 1 / Aerotank No 1		Аэротенк No 2 / Aerotank No 2		Аэротенк No 3 / Aerotank No 3	
на выходе /outflow	SVI ml/g	MLSS / г/дм3	SVI ml/g	MLSS / г/дм3	SVI ml/g	MLSS / г/дм3
До начала ОПИ / before						
20.11.2023	75.7	4.0			156.5	5.4
22.11.2023	110.1	3.4			154.8	5.6
24.11.2023	75.5	2.7			81.4	11.7
27.11.2023	74.1	3.0			77.7	11.3
29.11.2023	76.9	3.8			59.2	16.6
01.12.2023	115.0	2.8			180.9	5.1
04.12.2023	198.0	3.3			189.0	4.7
11.12.2023	162.5	3.6			179.8	4.6
19.12.2023	80.0	0.6	160.9	3.2	271.1	2.8
25.12.2023	123.0	5.4	134.0	6.1	225.0	3.6
С начала ОПИ /start trial 04.01.2024						
08.01.2024	252.0	2.7	233.0	3.0		
11.01.2024	242.0	2,89	264.0	3,02		
15.01.2024	265.0	2.5	257.8	2.9		
18.01.2024	234.4	2.6	255.9	2.5		
05.02.2024	132.0	3.7	142.0	4.0		
12.02.2024	152.0	3.1	131.8	3.5		
19.02.2024	112.0	4.2	149.0	4.4		
23.02.2024	135.0	3.9	123.0	4.5		



sludge blanket / подушка ила во ВО , м				
clarifier No 1	clarifier No 2	clarifier No 3		дата / date
PO No 1	PO No 2	PO No 3	PO No 4	
0.00	0.00	0.00		
	0.90	1.50	0.88	11.01.2024
	0.90	1.20	0.75	12.01.2024
	3.10	3.32	2.40	13.01.2024
	0.70	1.30	0.70	18.01.2024
	0.70	1.10	0.70	19.01.2024
	0.60	0.95	1.00	24.01.2024
	0.70	1.20	0.70	31.01.2024
	0.90	1.00	0.95	19/02/2024
	1.00	0.80	1.30	23/02/2024

Influent and Effluent parameters



Influent

Data (mg/l)	SS	COD	BOD5	NH4-N	Phosphate	Nitrites	Nitrates
Before use Ydro Process®	262	415	205	42	7.6	0.34	0.54
During Use (04.01.2024-present)	256	420	190	41	8.4	0.31	0.9

Effluent

Data (mg/l)	SS	COD	BOD5	NH4-N	Phosphate	Nitrites	Nitrates
Before use Ydro Process®	35	20	10	6.6	0.94	1.71	15
During Use (04.01.2024-present)	18	34	15	6.7	1.2	0.9	8.3

**Excess sludge reduction**

sludge for disposal reduced by more than 90%

**Cost reduction**

costs associated with sludge treatment and disposal have been reduced by more than 90%;

**Reduction of unpleasant odours**

H₂S decreased at the measuring points from 32 mg/m³ to 5 mg/m³, and to 0.5 mg/m³

**Effluent parameters**

within allowed limits



BROOKLAKE