

BEST, Gdansk 12/6-18

VIMMERBY and LINKÖPING

HANDLING OF WASTEWATER FROM FOOD INDUSTRIES CONNECTED TO OUR WWTP:s

Cooperation practices and tools for management of industrial wastewater.
Examples from Sweden.

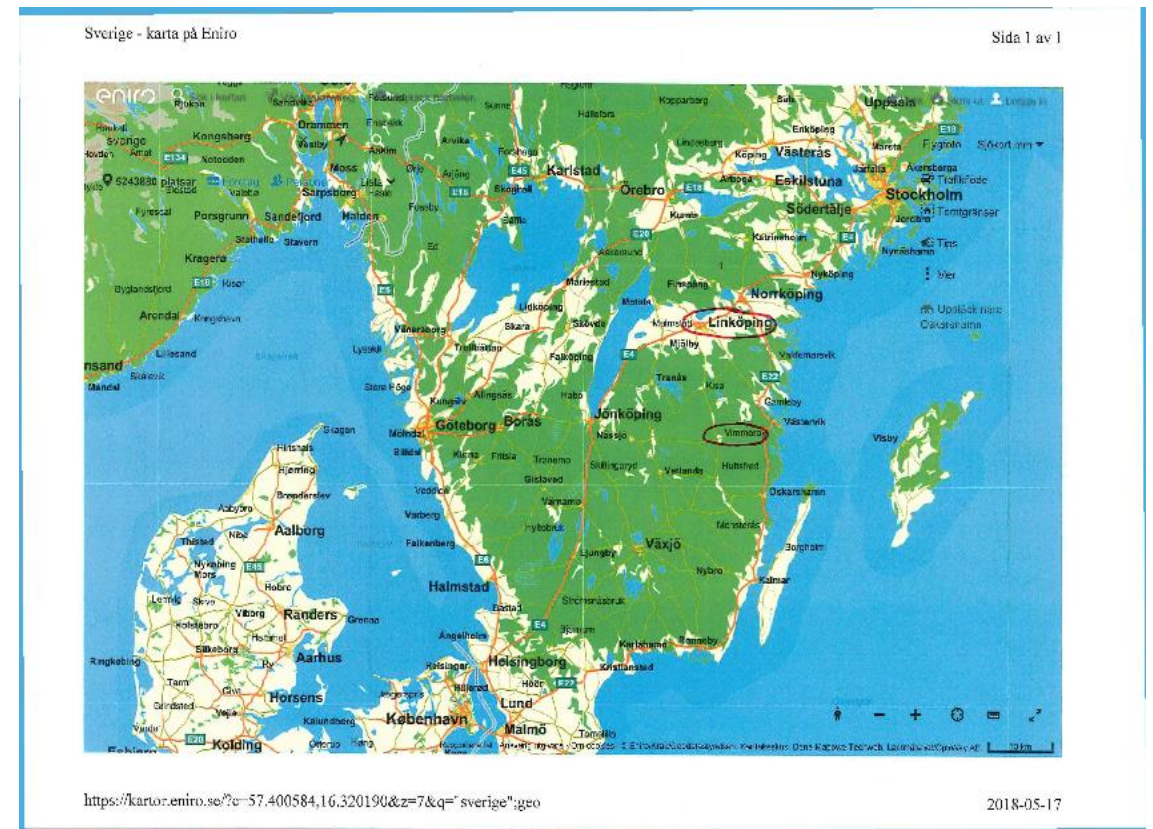
Who we are:

Vimmerby:

Torbjörn Johansson. torbjorn.b.johansson@eksjoenergi.se

Linköping:

Bo Jonsson. bo.jonsson@tekniskaverken.se



VIMMERBY:

- LARGE LOAD OF WASTEWATER FROM THE FOOD INDUSTRY COMPARED TO HOW MANY PEOPLE LIVING IN THE TOWN
- NEEDS A SPECIAL INDUSTRIAL PRETREATMENT FOR THE WASTEWATER FROM THE FOOD INDUSTRY

LINKÖPING:

- ALMOST THE SAME LOAD OF WASTEWATER FROM THE FOOD INDUSTRY AS IN VIMMERBY BUT IN A TOWN WITH MUCH MORE PEOPLE
- DON'T NEED ANY INDUSTRIAL PRETREATMENT FOR THE WASTEWATER FROM THE FOOD INDUSTRY

ORGANIZATION TO OUR ACCISTANS:

- The Swedish Water & Wastewater Association, SWWA ("SVENSKT VATTEN") www.svensktvatten.se
- The Swedish Water & Wastewater Association was set up by the municipalities in 1962 to assist with technical, economic and administrative issues and to represent the interests of the municipalities in negotiations with authorities and other organisations on regulations.

GUIDELINES:

- P95 FROM SWWA. "Advices when receiving wastewater from industry and other activities".

Gdansk 20180612
Torbjörn Johansson
Vimmerby Energi och Miljö AB



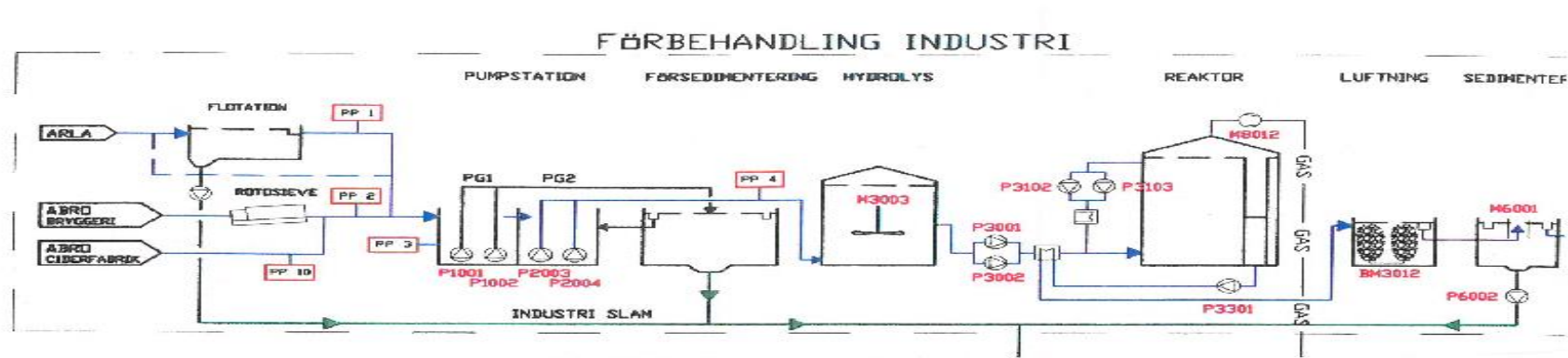
To succeed, cooperation between the parties is required

- State Authorities / Environment)
- Technology (methods)
- Legal (contract, debit)
- The municipality (Electricity, heat, water, roads)
- Business (Subcontractors)

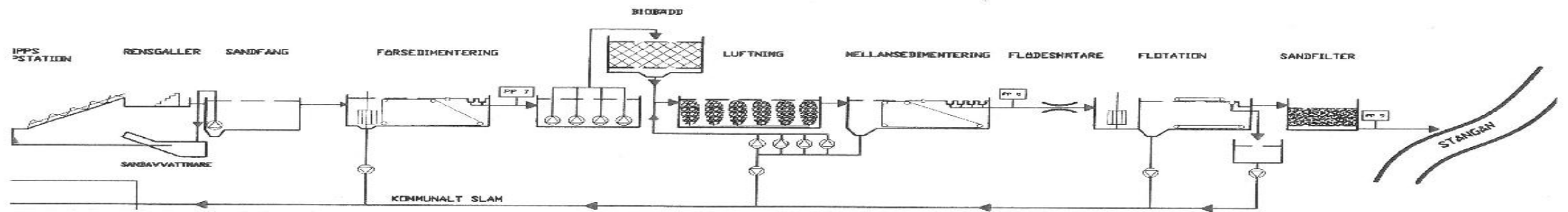
Dimensioning, Loads

- Residents 8000 Pe
- Industry 48 800 pe
- Dim 92 000 pe / 6440 kg BOD7
- m³ / d 3780 average
- Sludge 2554 tonnes / year
- Residue 10mg / l BOD7, 0.3mg / l
- Phosphorus, average 3.6mg/l 0.11 mg / l

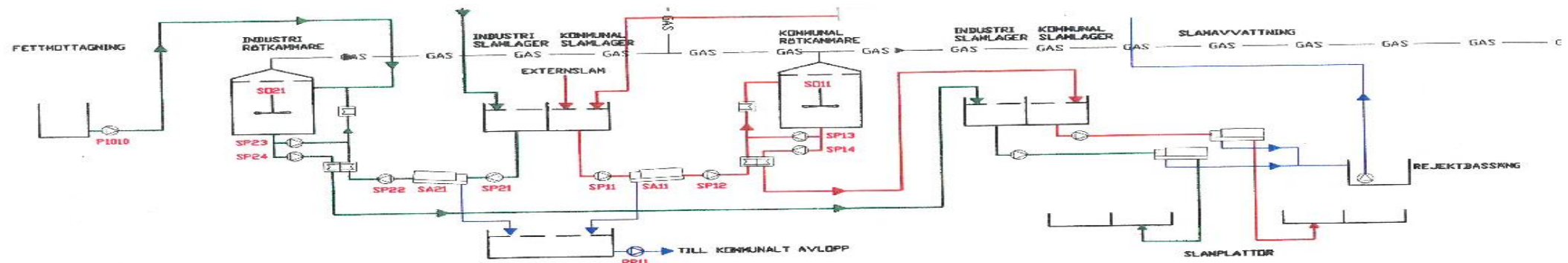
Industrial pretreatment



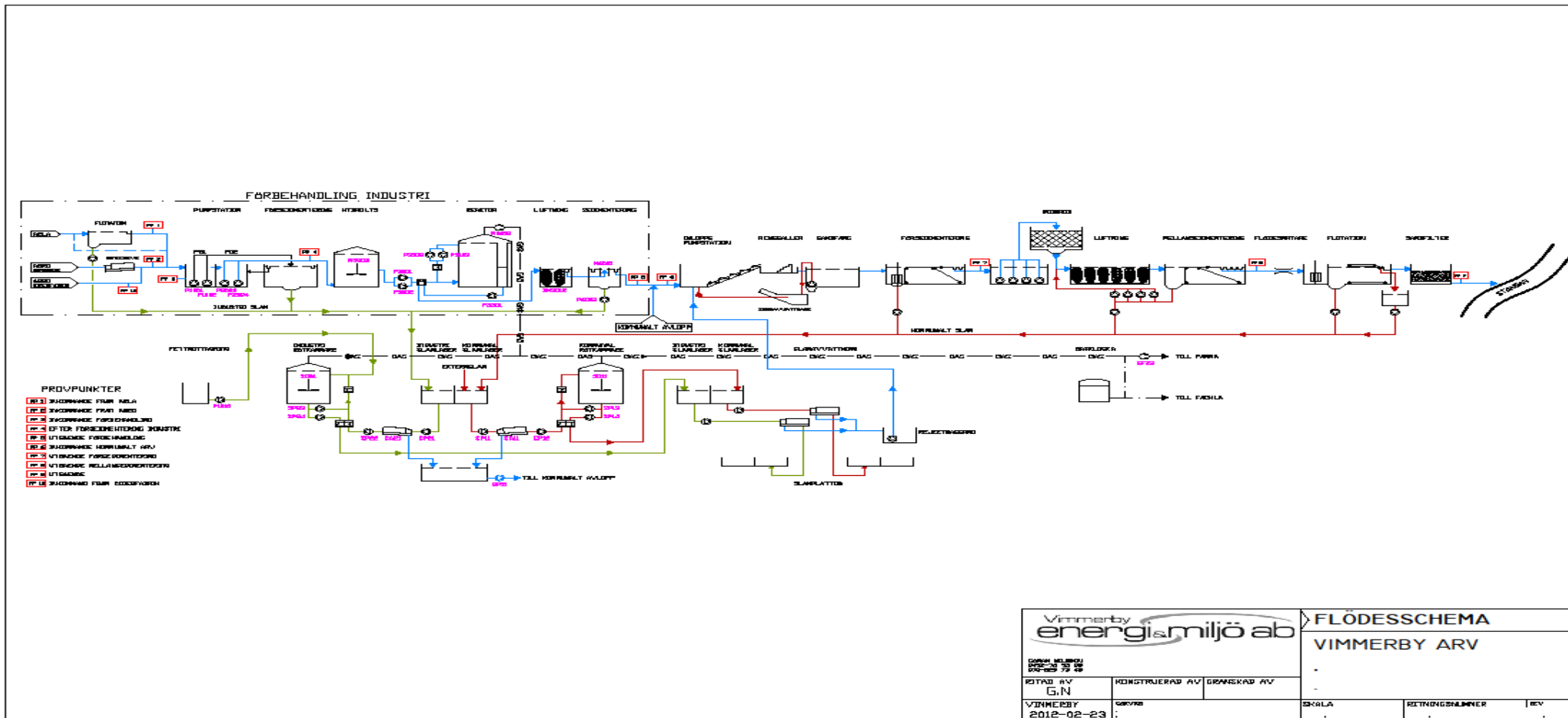
Municipal purification



Sludge, Gas



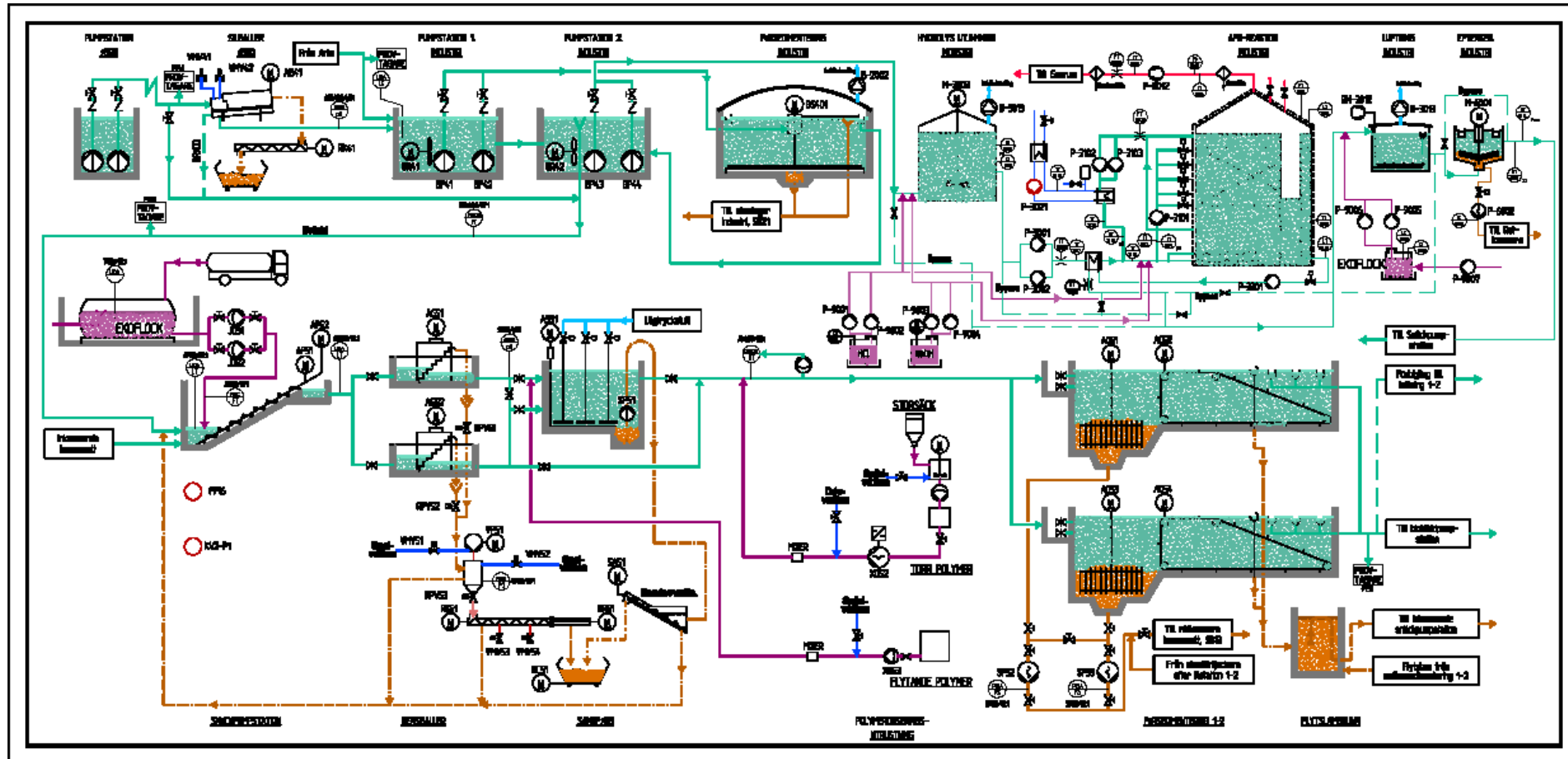
Industrial treatment



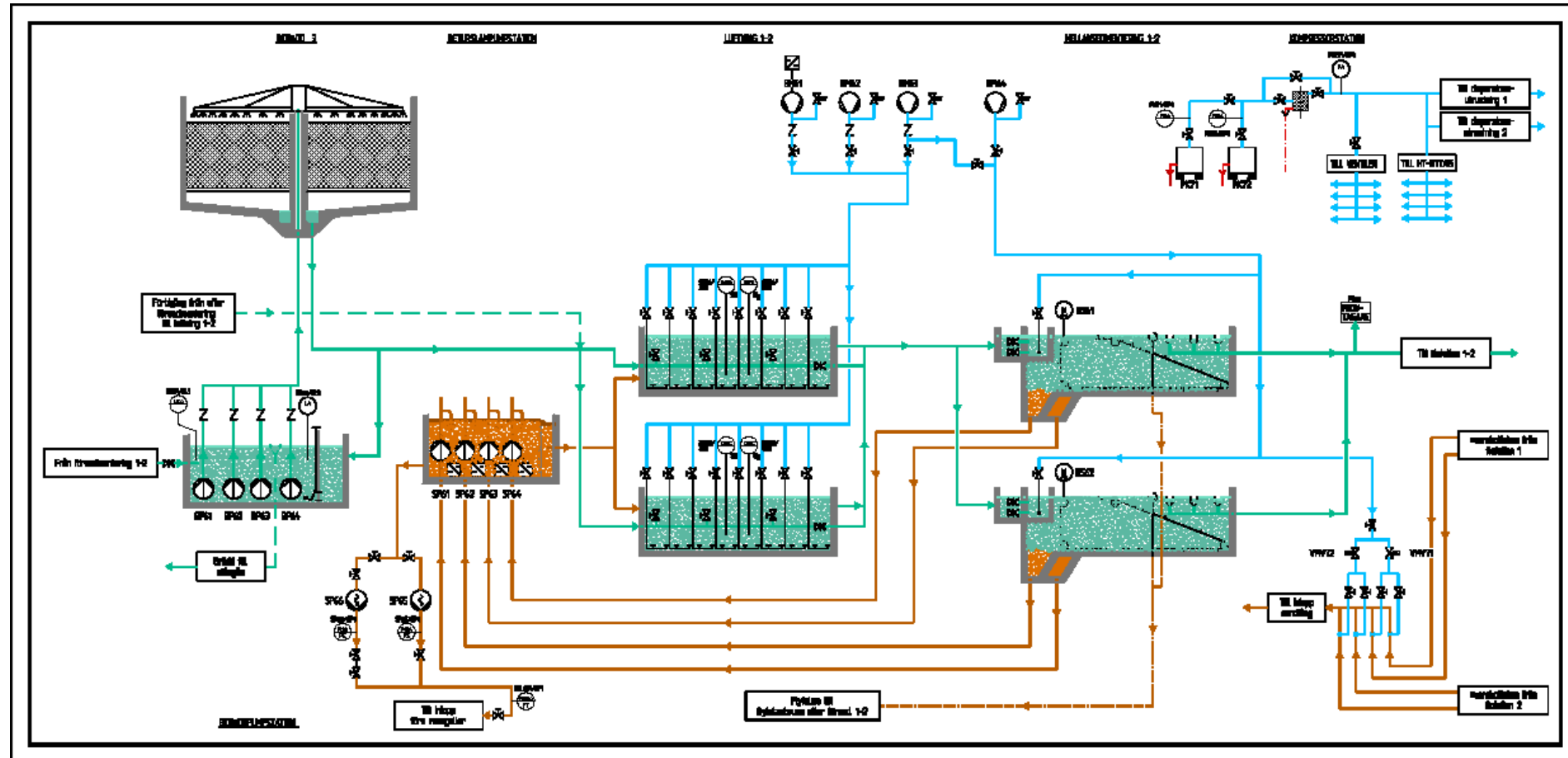
Vimmerby reningsverk



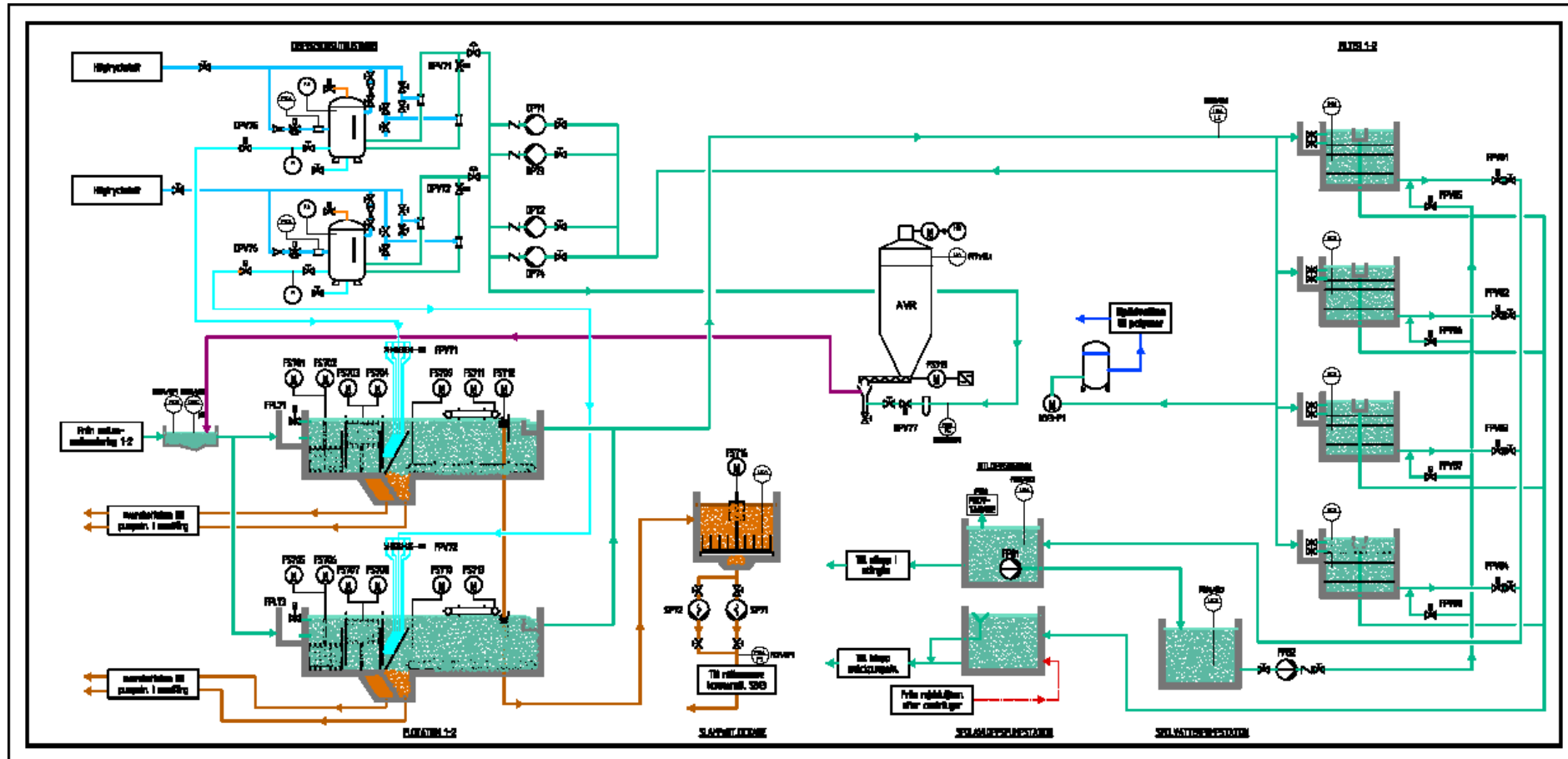
Industrial pre-treatment



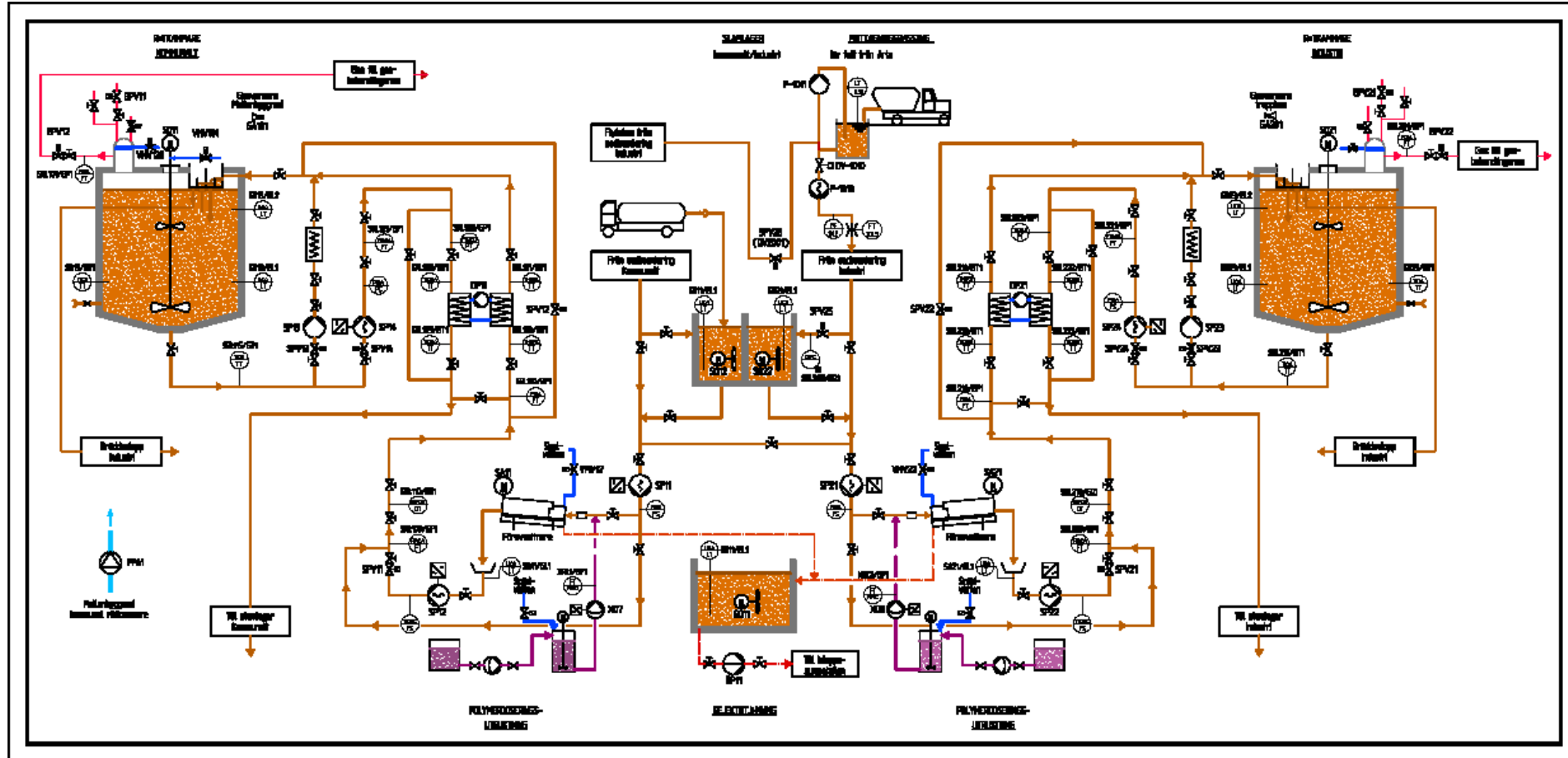
1st biology increased



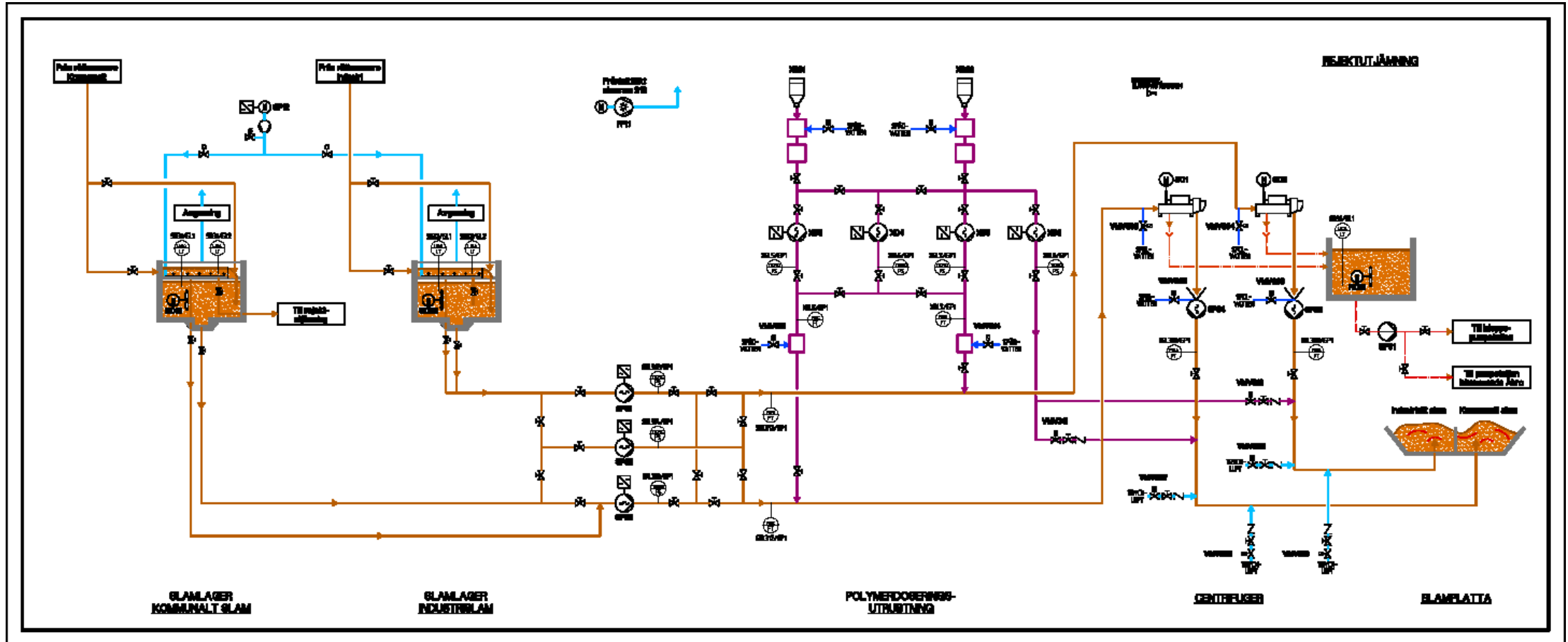
Kemsteg with sand filter



Sludge treatment



Sludge treatment



Linköping WWTP

WWTP 2017

PEOPLE IN THE CITY:	145000 PE
FROM INDUSTRI:	46000 PE
PERMIT FROM AUTHORITIES MAX:	340000 PE
NORMAL FLOW:	40000 m ³ /day
DRAINWATER LEAKING TO PIPES:	16 %



Three food industries are connected to our WWTP

The dairy ARLA:

	BOD7	Susp.	P-tot	N-tot	Flow
Year 2017	775 ton	311 ton	7,3 ton	37,9 ton	510055 m3

ARLA pre-treatment before the connection to our piping system.

- Storing tank to release as smooth flow as possible throughout the day. (Does not work well)
- pH adjustment to range pH 6.5-11.
- Other suitable waste material from ARLA are used in the biogas production at Tekniska Verken.

The candy factory CLOETTA:

	BOD7	Susp.	P-tot	N-tot	Flow
Year 2017	229 ton	28 ton	0,1 ton	1,7 ton	55540 m3

CLOETTA pre-treatment before the connection to our piping system.

- pH adjustment to range pH 6.5-11.
- Fat separators.
- Suitable part of the material goes to farmers as pig food.

The slaughterhouse **SCAN**:

	BOD7	Susp.	P-tot	N-tot	Flow
Year 2017	169 ton	63 ton	3,2 ton	15,1 ton	213871 m3

SCAN pre-treatment before the connection to our piping system.

- Fat separators.
- Storing tank to release as smooth flow as possible throughout the day.
- Other suitable waste material from SCAN are used in the biogas production at Tekniska Verken.

RELATIONSHIP BETWEEN FOOD COMPANIES – AUTHORITIES – TEKNISKA VERKEN

- The same as in Vimmerby. We all need to cooperate to succeed.
- Each food company has been granted permission from the County Administrative Board in "Östergötlands Län" (Länsstyrelsen) how much of BOD7, Susp, P-tot, N-tot and flow they may deliver to WWTP.
- If a company plans to change its production so that the condition is likely to be exceeded then they shall apply for a new permit.
- The Linköping municipality's "Environmental Office" (Miljökontoret) are responsible for monitoring that companies are within limits of their respective licenses.

RELATIONSHIP BETWEEN FOOD COMPANIES – AUTHORITIES – TEKNISKA VERKEN

- Tekniska verken have agreements with each company. The companies pay Tekniska verken according to how much they release to WWTP. The fees are revised each year according to the consumer price index. For 2017, Tekniska verken invoiced for a total over 4 000 000 SEK.
- The companies take samples submitted to independent laboratories for analysis. These analyzes are the basis for reported amounts to "Environmental Office" (Miljökontoret) and to Tekniska verken.
- The companies have a notification obligation, if there is a disturbance in their production that causes a temporary increase in emissions. Immediately they will inform our WWTP so that they have the chance to take action to accomodate the increased load, if possible. Planned work that give rise to increased load must be announced in advance.
- The "Environmental Office" (Miljökontoret) together with Tekniska verken conducts joint supervisory visits with each company 3 times a year. This will review the emission values of the previous period and possible changes in production.

THANKS FOR LISTENING!
Bo Jonsson

