

Input Parameters In sheet-<Maincalc> primary settling has not been selected !!! ignore below data !!!

Qi,avg	167	m3/h	Pre-precipitation	yes	MW	630,4	kg/kmol
Qi,pf	417	m3/h	Req P-removal	11,0	density	2170	kg/m3
fcv	1,5	COD/VSS	(quick estimate)	73%	% wt	100%	g/g
Tmin	12	deg C	Me(III)/P ratio	1,75	% Me in comp.	9%	g/g
fv (mE1)	0,7		Metal salt	Aluminium Sulphate (powder)	formula	Al2(SO4)3.16H2O	
Hps	2,0	m			molar Me(III)/C	2	mol/mol
Tsm,pf (min)	80	m/d	Metal phosphate	AlPO4		122	kg/kmol
Tsm,pf (max)	120	m/d	Metal hydroxide	Al(OH)3		78	kg/kmol
Tsm,avg	40	m/d					

Calculation of settler dimensions

Aps	100	m2	
Tsm, pf	100	m/h	Surface area O.K.
Vps	200	m3	
Rhps	1,2	hr	
Rp (20 deg C)	70%	DWF	
Rp (Tmin)	55%	DWF	
Xtps	8	kg TSS/m3	Either use a sludge thickener or increase the height of the primary settler !

Composition of raw and pre-settled influent **Primary sludge production** **Dosing requirements**

Parameter	Raw Influent	Removal	Pre-settled Influent						
fns	10%		16%	MEva1	494	kg VSS/d	MPchem =	35,3	kg P/g
fnp	10%		7%	MEvna1	104	kg VSS/d		1,1	kmol P/d
fbs	24%		38%	MEv1	582	kg VSS/d	MMe(III) =	2,0	kmol/d Al(III)
fbp	56%		40%	ME MePO4	1,1	kmol MePO4/d		1,0	kmol/d Al2(SO4)3
fsb	30%		49%		139	kg MePO4		627	kg/d Al2(SO4)3
St	600	218	382	ME Me(OH)3	0,9	kmol Me(OH)3/d		627	kg/d Al2(SO4)3
Sb	480	185	295		67	kg Me(OH)3/d		0,3	m3/d Al2(SO4)3
Sns	60	0	60	MEt1	1036	kg TSS/d			
Snp	60	33	27	fv1	0,56	(-)			
Sbs	144	0	144	q1	129,6	m3/d			
Sbp	336	185	151						
Ss	204	0	204						
Sp	396	218	178						
Xv	264	145	119						
fn1	7% of VSS								
Nt	53	10	43						
Np	18	10	8						
Ns	35	0	35						
fp1	1,5% of VSS								
Pt	15	11,0	4,0						
Pp	4,0	2,2	1,8						
Ps	11,0	8,8	2,2						

Primary Sludge Thickener

Primary sludge thickener ?	yes	Either use a sludge thickener or increase the height of the primary settler !
H	3	m
Athp	14,8	m2
Vthp	44,4	m3
Dthp	4,3	m
Fsolids	70	kg TSS/m2*d