

Introduction to design and technology of Septic Tanks

December 2011



Asahi Craft Engineer

Overview of Our Work

From planning to design of waterworks and sewage systems

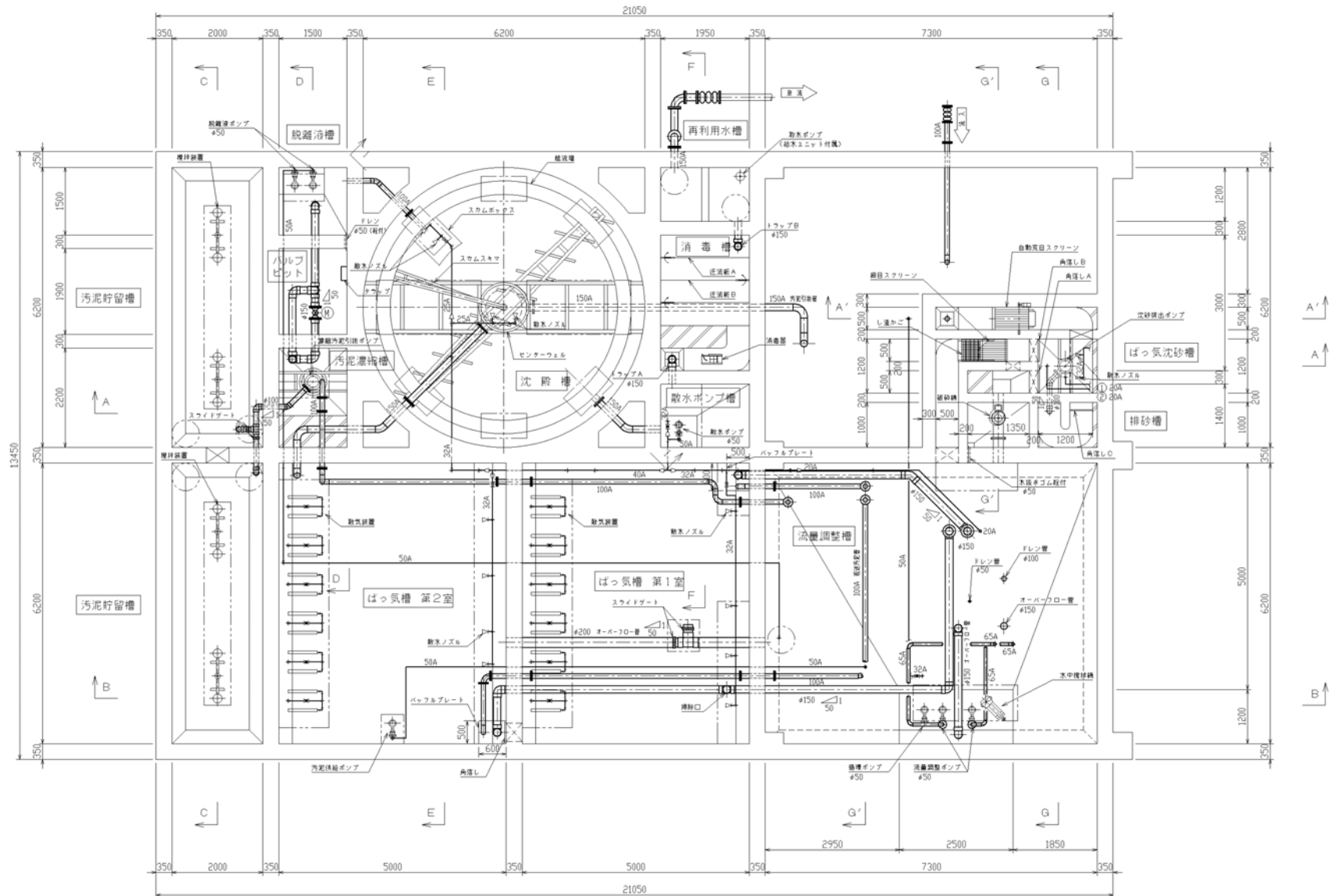
Review of Possible Treatment Methods

```
graph TD; A[Review of Possible Treatment Methods] --> B[Selection of Facilities]; B --> C[Design];
```

Selection of Facilities

Design

Drafting and Design



Size to treat 1160 people

Treatment of Sewage Water

Septic Tank with single treatment Chamber



For treatment of toilet waste water



Improvement of sanitation conditions

Combined Septic Tank



For treatment of both toilets and household wastewater



Improvement of environment where wastewater is discharged

Water Quality

BOD

••• Biochemical Oxygen Demand

COD

••• Chemical Oxygen Demand

S S

••• Suspended Sludge

T-N

••• Total Nitrogen

T-P

••• Total Phosphorus

Treatment Process of Septic Tanks

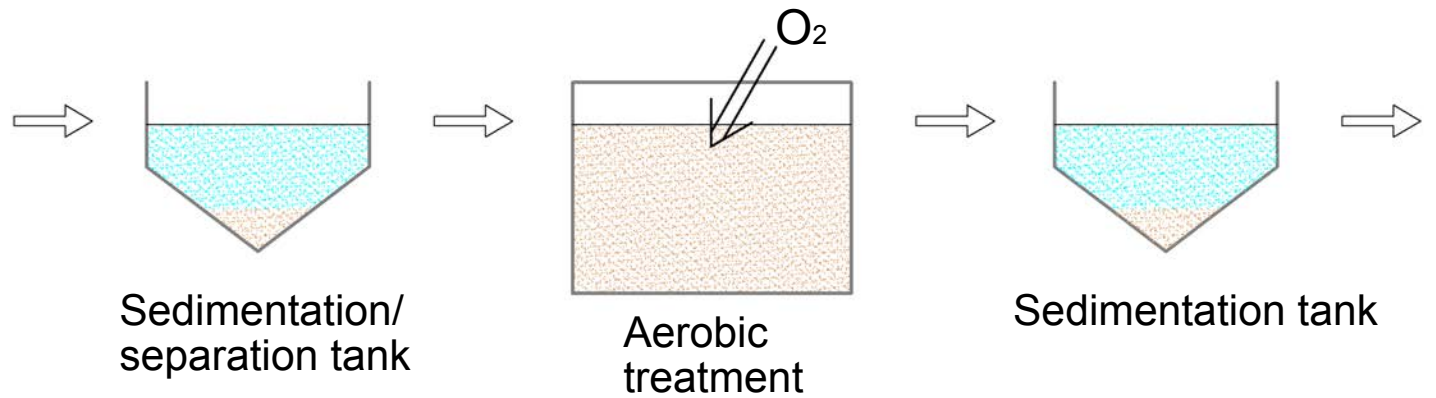
告示区分	Removal ratio		concentration [mg/L]					分離接触ばっ気	分離ばっ気	散水ろ床	嫌気ろ床接触ばっ気	脱窒ろ床接触ばっ気	回転板接触	接触ばっ気	長時間ばっ気	腐敗槽	地下浸透	No of people the tank can treat								
	BOD	SS	BOD	SS	COD	T-N	T-P											5	50	100	200	500	2000			
	第1	65%	-	90	-	-	-											-	■	■	■					
	90%	-	20	-	-	-	-	□			□															
第2	70%		60		60					□		□	□													
第3	85%		30		45					□		□	□													
第4	55%	-	120	-	-	-	-									■										
第5	-	55%	-	120	-	-	-										■									
第6	90%	-	20	-	30	-	-			□			□													
基本処理プロセス								1	1	2or1	2	2	1	1	1	3	3	1 : 好気、2 : 嫌気+好気、3 : 嫌気								
微生物の生育環境								B	F	B	B	B	B	B	F			B:生物膜法、F:浮遊生物法								

■: 単独処理
□: 合併処理

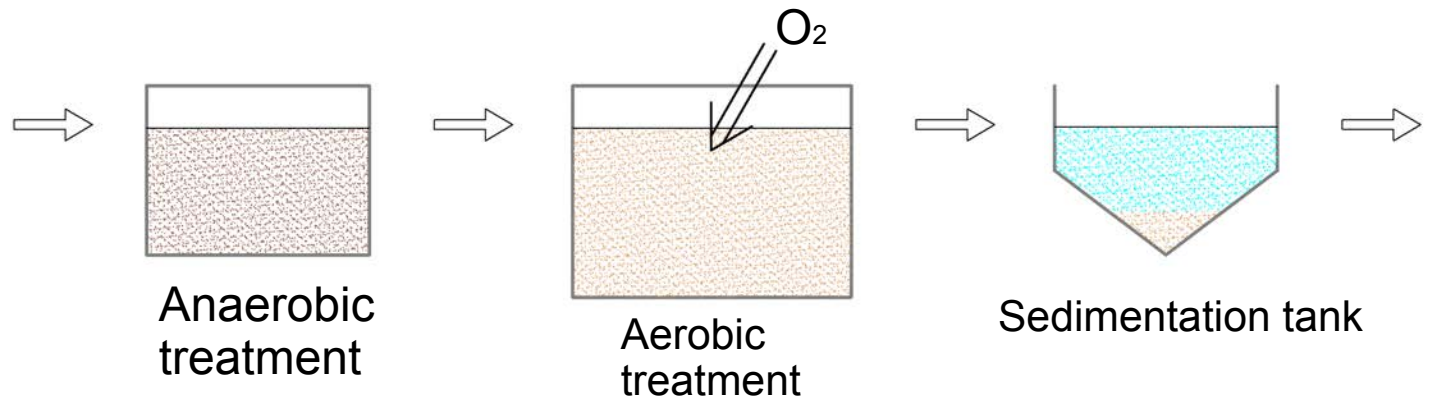
Basic Treatment Processes

©Organisms are important in the septic tank treatment process !

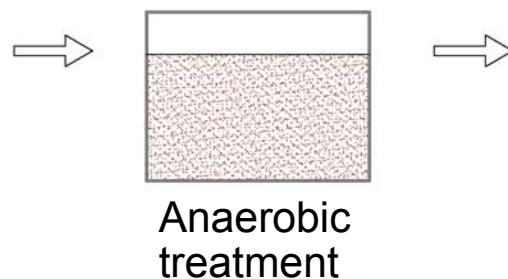
1. Aerobic



2. Anaerobic+ Aerobic

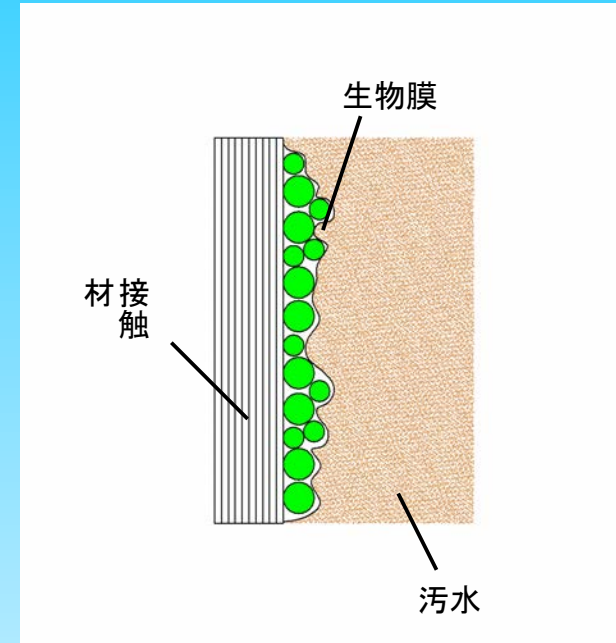
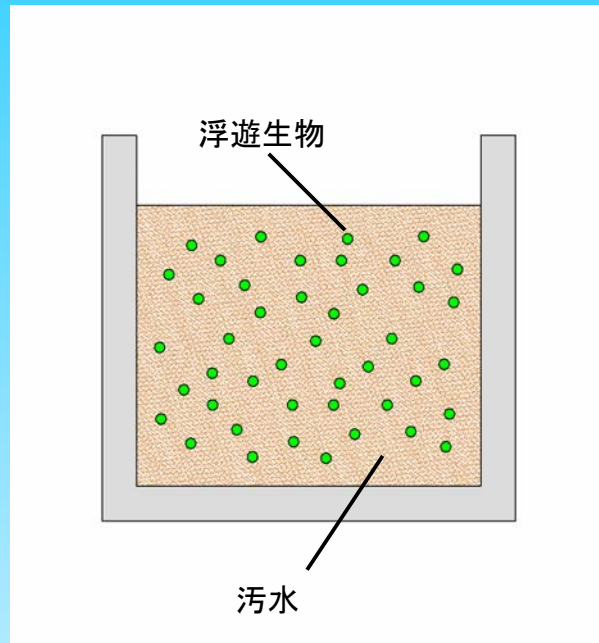


3. Anaerobic



Biotreatment

Image



Method

Activated Sludge Process

Biofilm Process

Food chain level

Low

High

Sludge generated

large

small

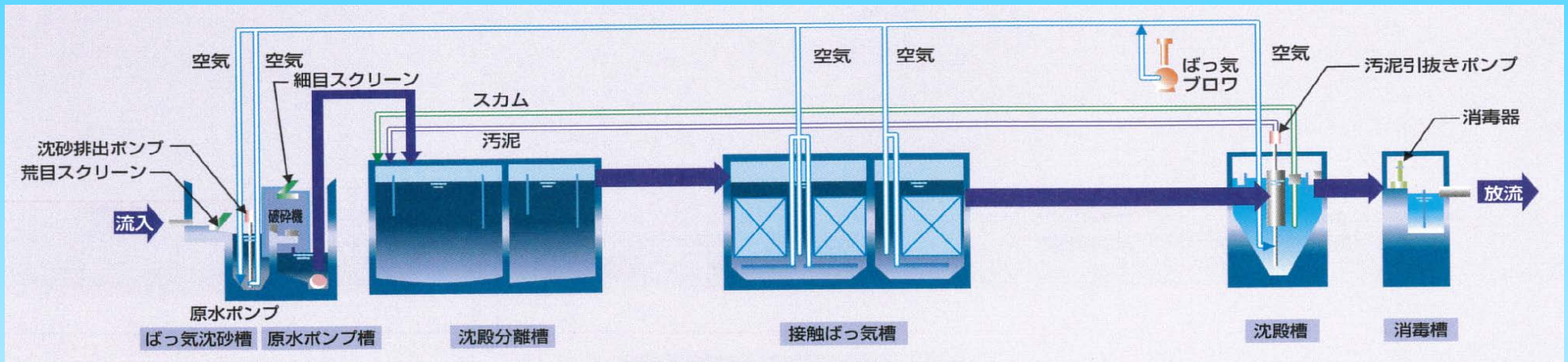
Maintenance

difficult

easy

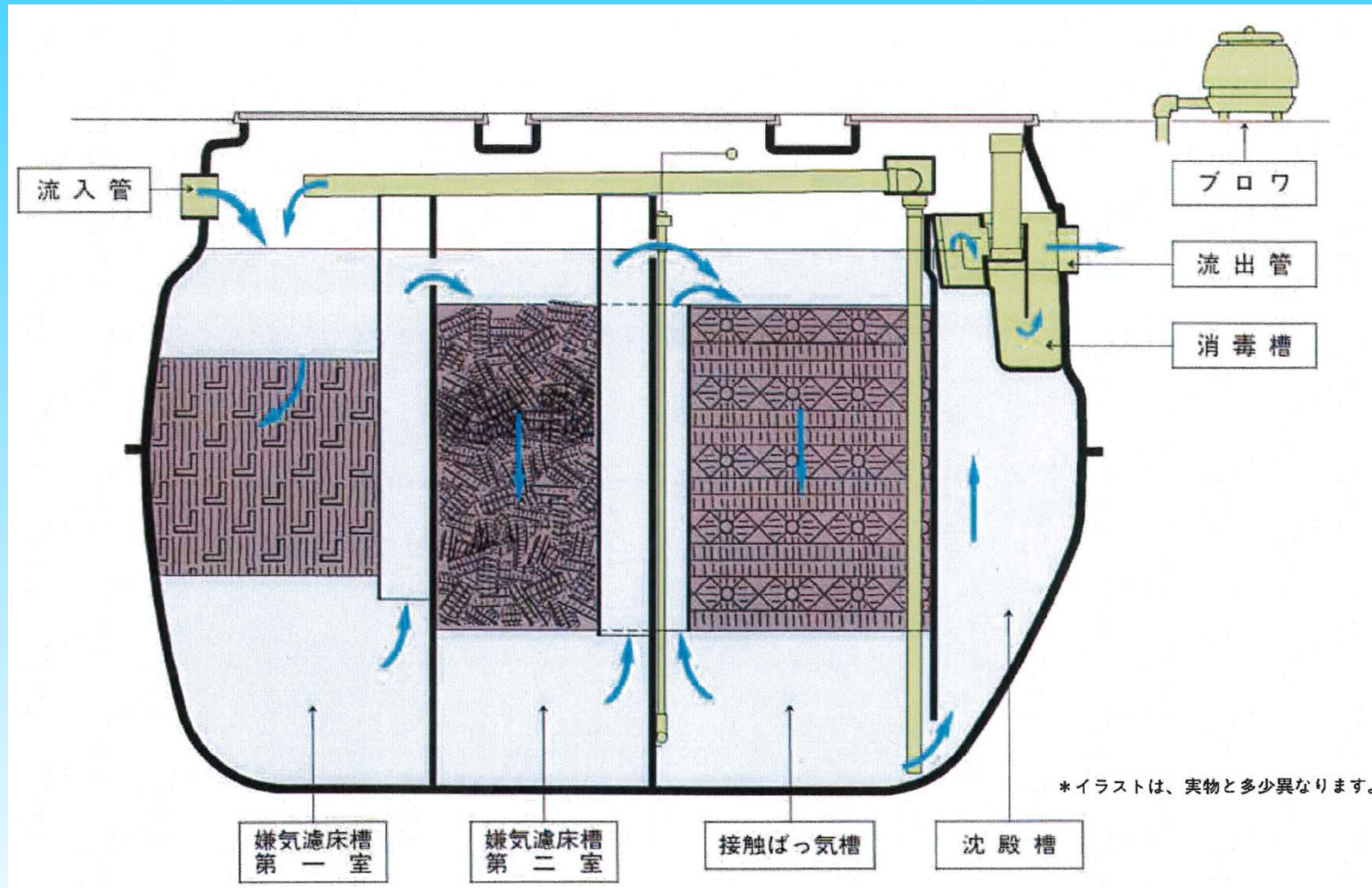
Example of Aerobic Treatment Process

Contact Aeration Method



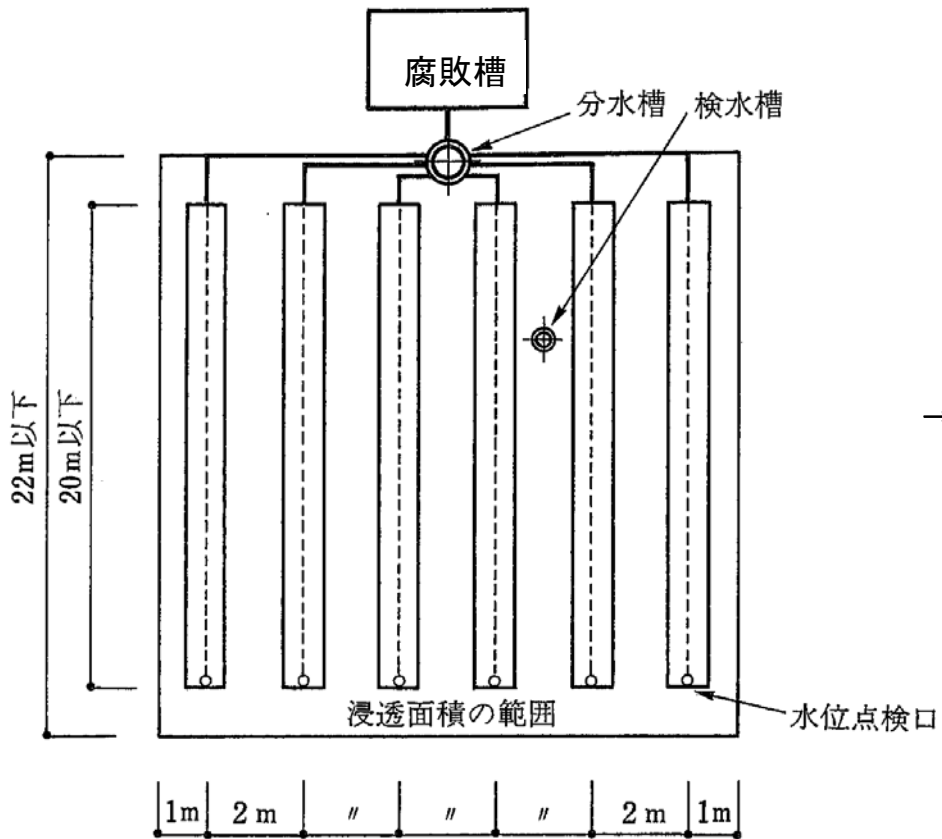
Example of anaerobic+aerobic treatment

嫌気ろ床接触ばっ気法

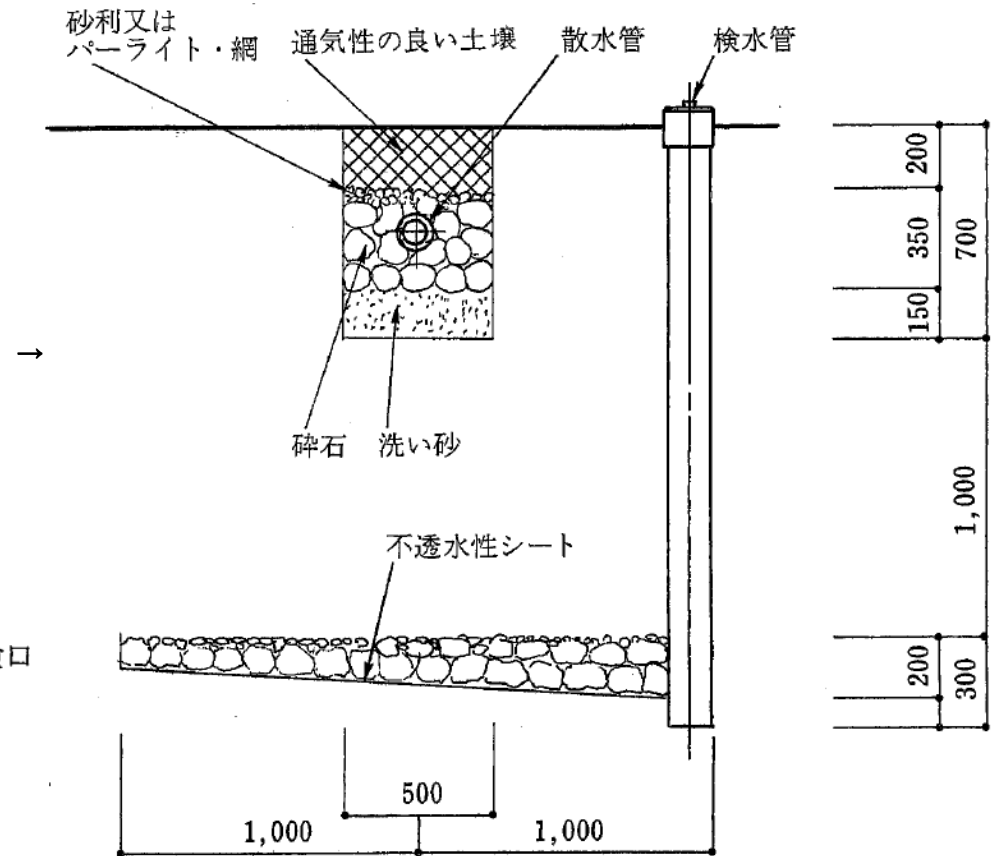


Example of anaerobic treatment

Septic Drainfield Treatment

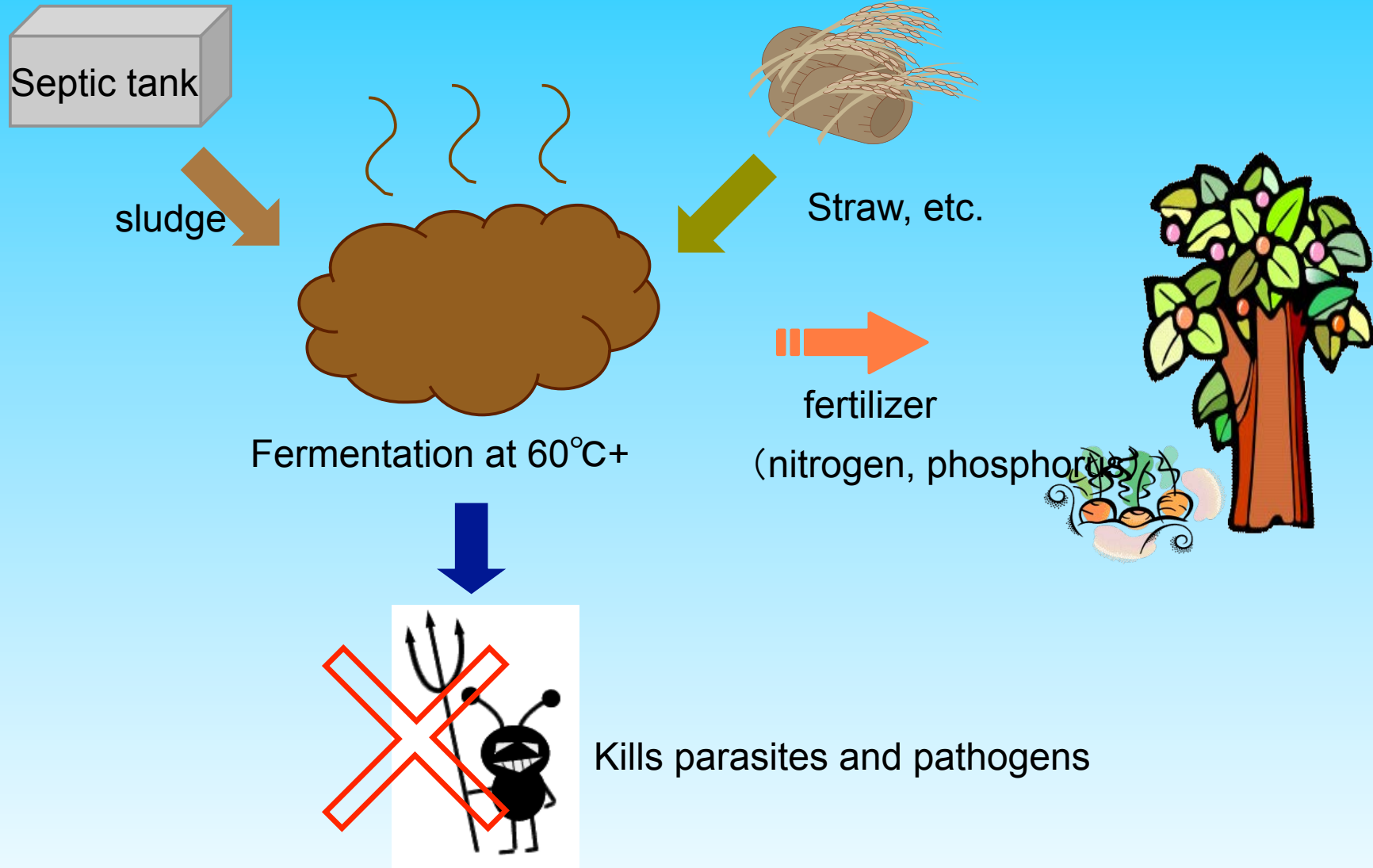


Ground plan example

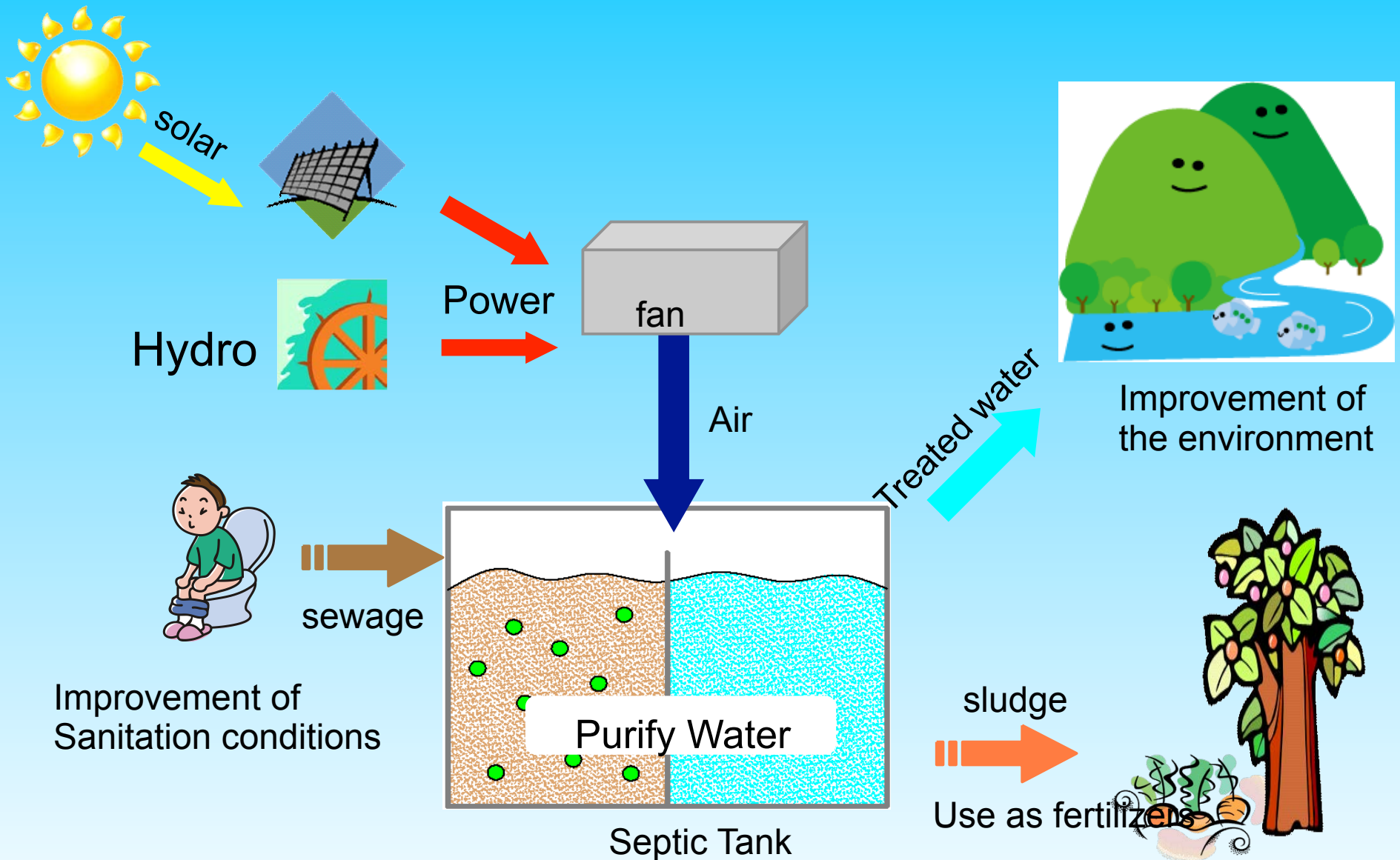


Sectional plan example

Treatment of Sludge



Some of our suggestions...



~ Can offer the most suitable planning for different cases ! ~



URL : <http://www.ace-camp.co.jp/>