Knowledge Sharing Program For Sanitation
PART – 1

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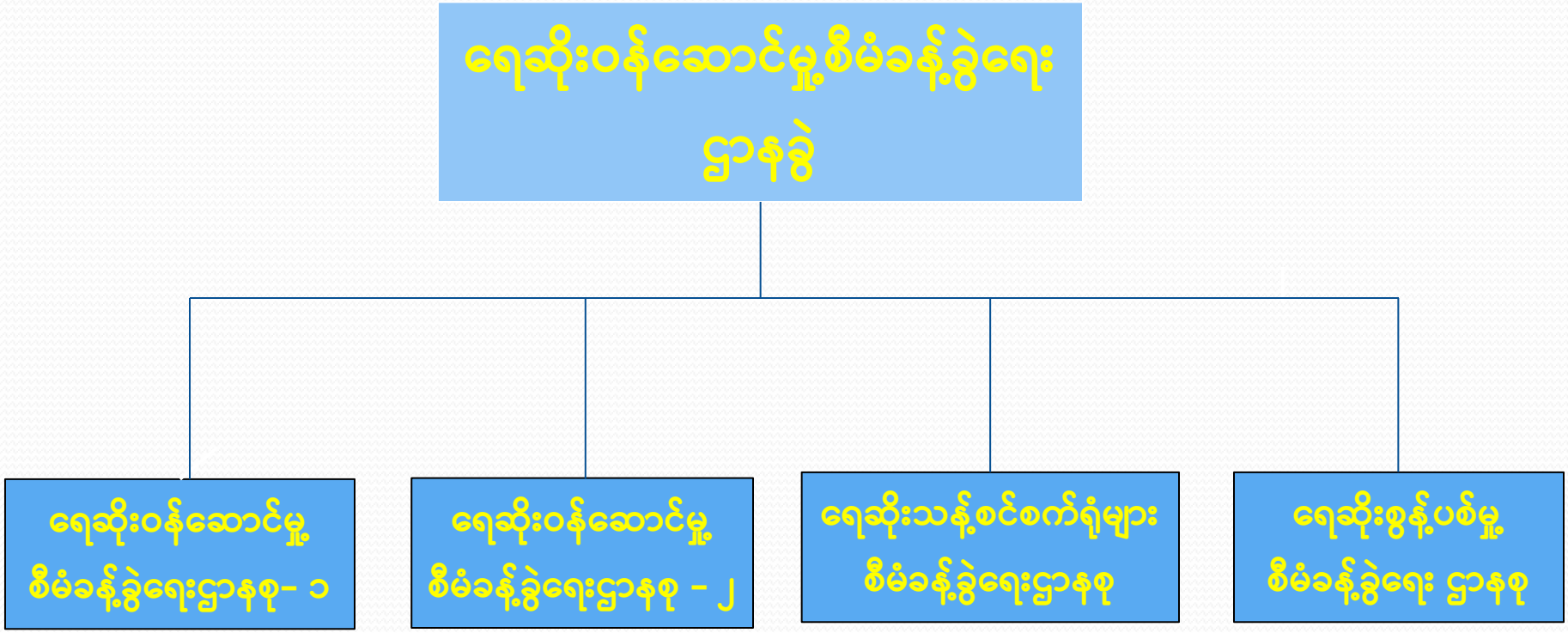
ရေဆိုးဝန်ဆောင်မှုစီမံခန့်ခွဲရေးဌာနခွဲ ဖွဲ့စည်းပုံ



History of sewerage System and it's development

I. Development of sewerage system

II. Applying ready made treatment System

III. Due to Population Density

IV. Increasing Water Table

V. Public Toilet

I. Development of sewerage system

II . Applying ready made treatment System

2013	January	YCDC	10m³	USD 10,000
2014	March	Phaung Daw Oo Pagoda	6m³	USD 7,500
2014	May	MCDC	10m³	USD 10,000
2016	December	Information Center	1m³ (5 sets)	USD 12,450
2017	January	Nyaung Shwe (Night Market)	3.6m³	USD 6,400
			Total	USD 46,350

2017	September	Shwe Dagone Pagoda (East, West, South, North)	41m³	USD 100,000
			Total	USD 100,000

III . Due to Population Density

Photo 4: From „hut-to-apartment" upgrading in Yangon

Photo 6: Local market in Yangon

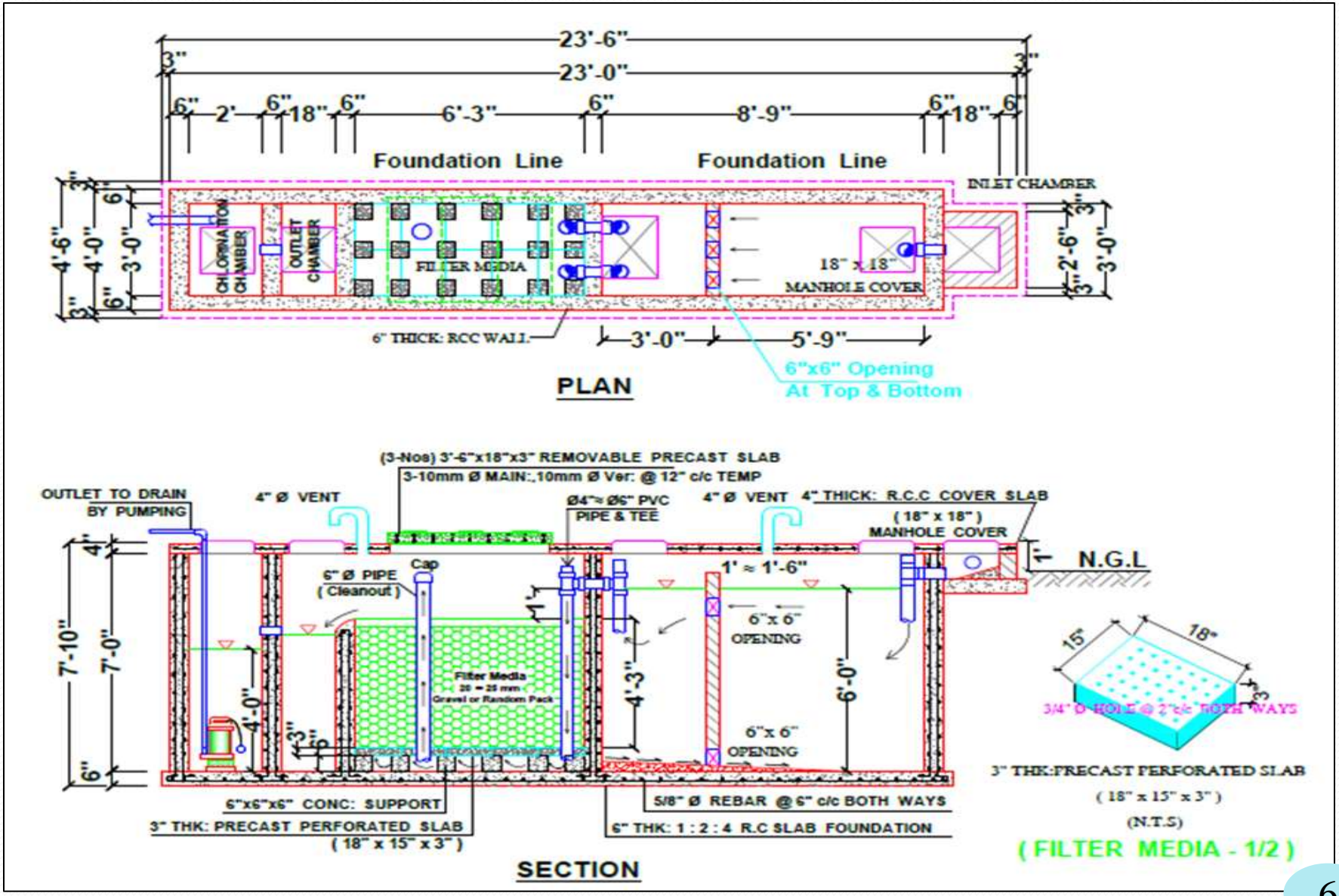
Photo 8: High population densities in downtown Yangon

Photo 7: New shopping complex and office tower at Thein Gyi Zay, Yangon

Photo 9: Diverse housing structures in downtown Yangon

New Yangon

IV . Increasing Water Table



V . Public Toilet

Information of Current Wastewater Treatment Plant

- About Wastewater Treatment Plant in Yangon , Just Now.
- To reduce BOD loading and other problem from Vacuum Truck
- How to use sludge?
- Micro-organism (Aerobic & Anaerobic Bacteria)

Disposal of sewerage into the river without treatment before establishment of Sewage Treatment Plant

Yangon City Development Committee started to construct wastewater treatment in June 2003 by own human resources with the guidance of State Government to protect the environment.

Location of Sewage Treatment Plant

Sewerage System

Estimated population with sewer(conventional sewer system) is 300,000 people . Main content of system are

1) Air Compressor Station(2) Pneumatic Ejectors(3) Air Pipeline

4) Gravity sewer pipeline(5) Wastewater Treatment Plant

Wastewater treatment plant

Air compressor station

Total length of sewer pipe line - (10.75) km(12"CI to 36"CI Pipe)

Sewage ejectors - (35) Nos

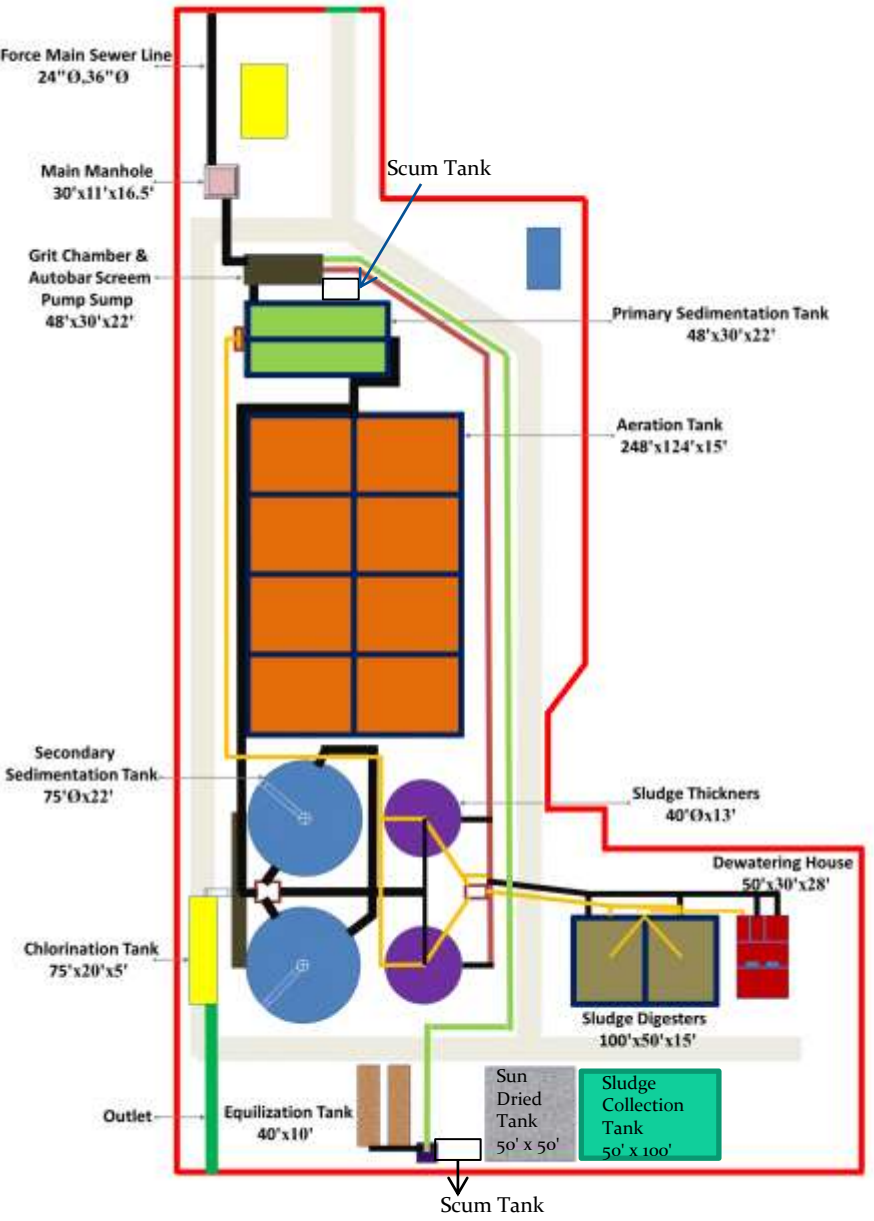
Manholes - 2114 Nos

Equalization Tank & Vacuum Truck

Year of Establishment - 12th April 2003
Year of Completion - 17th January 2005
Year of Opening ceremony - 22nd December 2006
Volume of Daily Treatable sewage - 3.25MGD
Developer - Myanmar Engineers of Yangon City Development Committee
Cost of Project - US$ 0.96 Millions (Myanmar Kyat -2065.7 Millions)
Areas of Plant – 5.56 Acres

Vacuum Truck

Layout plan of Treatment plant



Establishment of Sewage Treatment Plant

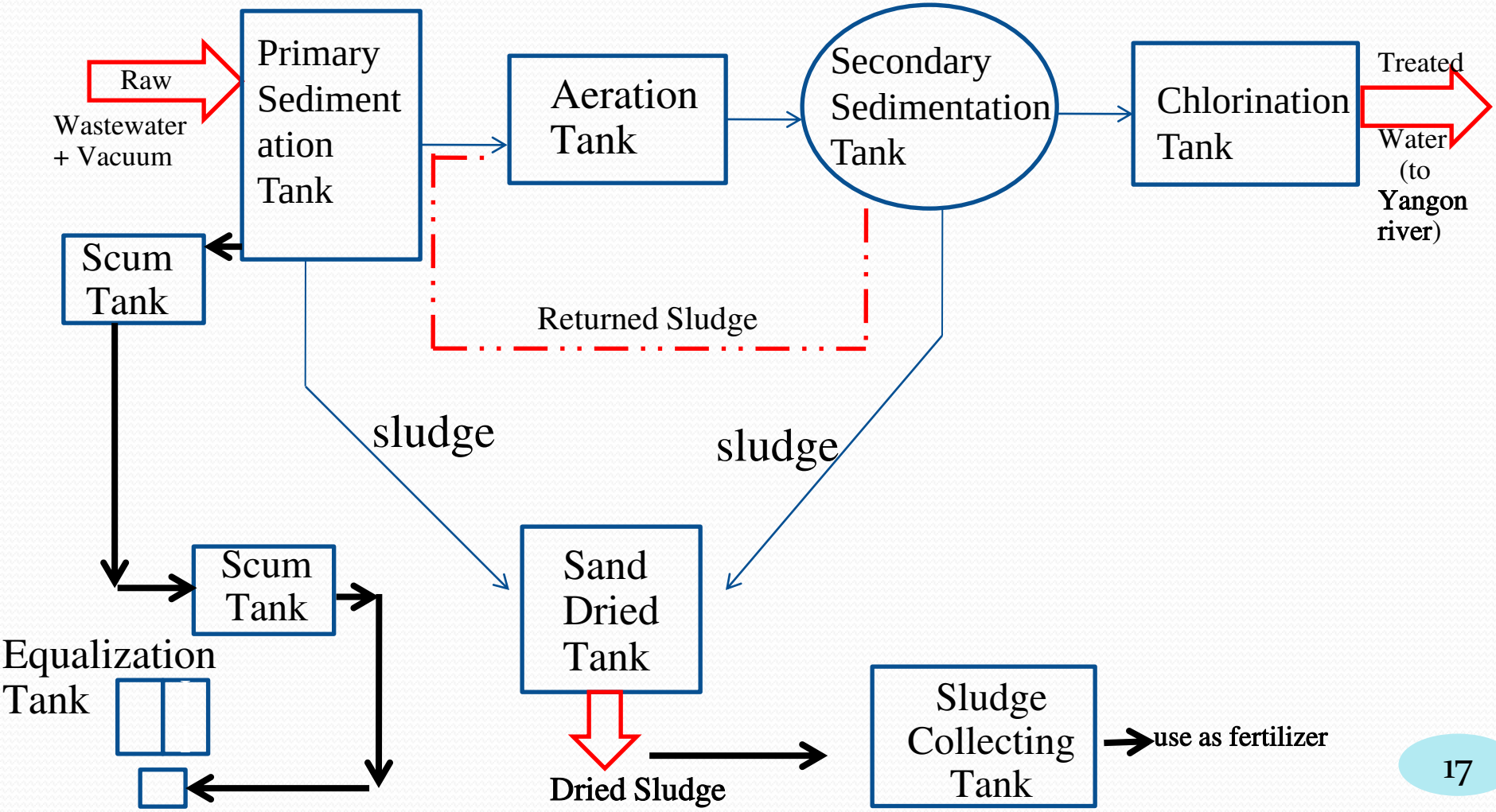
Programme for Sewage Treatment Project

- ❑ Detail Design
- ❑ Implementation
- ❑ Installation
- ❑ Commissioning
- ❑ Installation
- ❑ Training

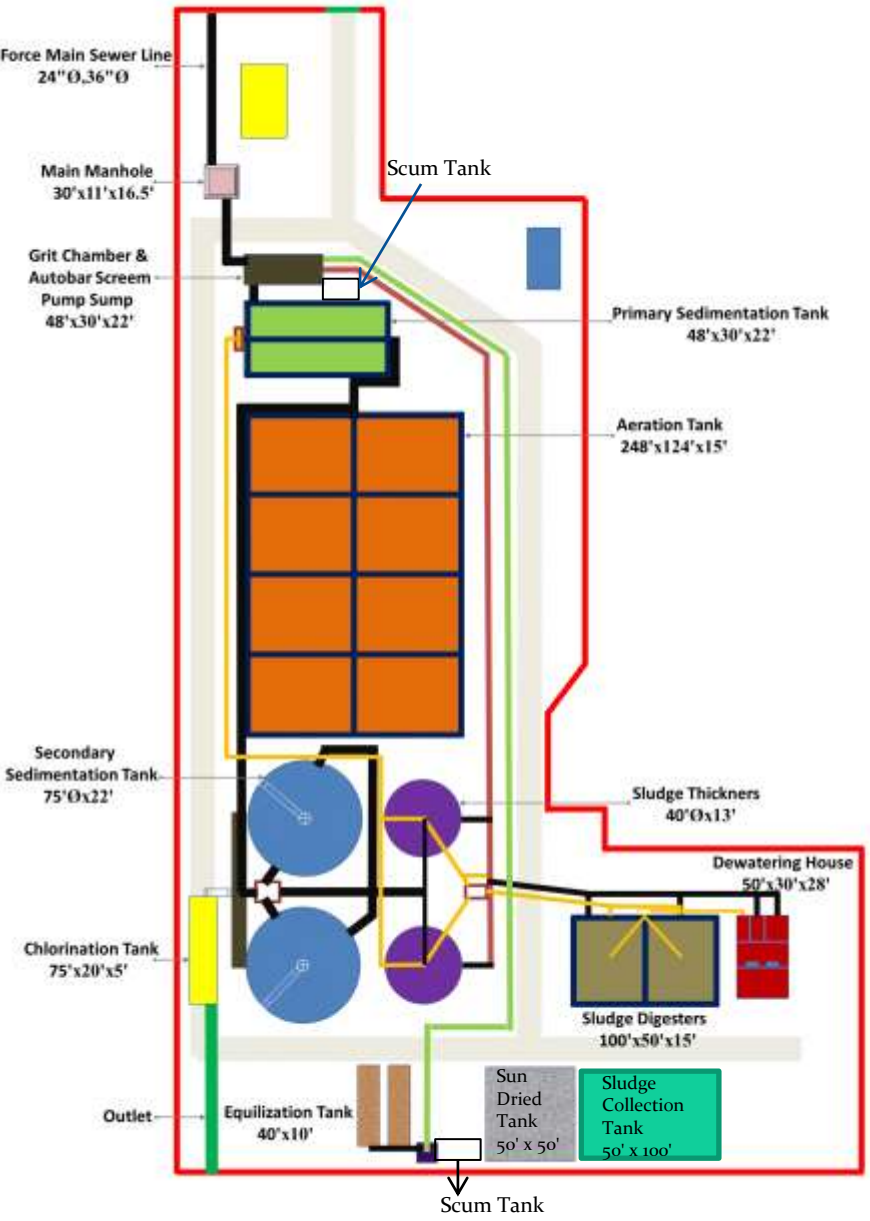
Design Criteria:

- ➢ Area of Plant - 5.56 acres
- ➢ Design population - 300,000
- ➢ Daily wastewater discharge- - 14775 m3/day
- ➢ BOD influent - 600mg / l
- ➢ BOD effluent - 20 mg / l
- ➢ Suspended solid influent- 700 mg / l
- ➢ Suspended solid effluent- 40 mg / l

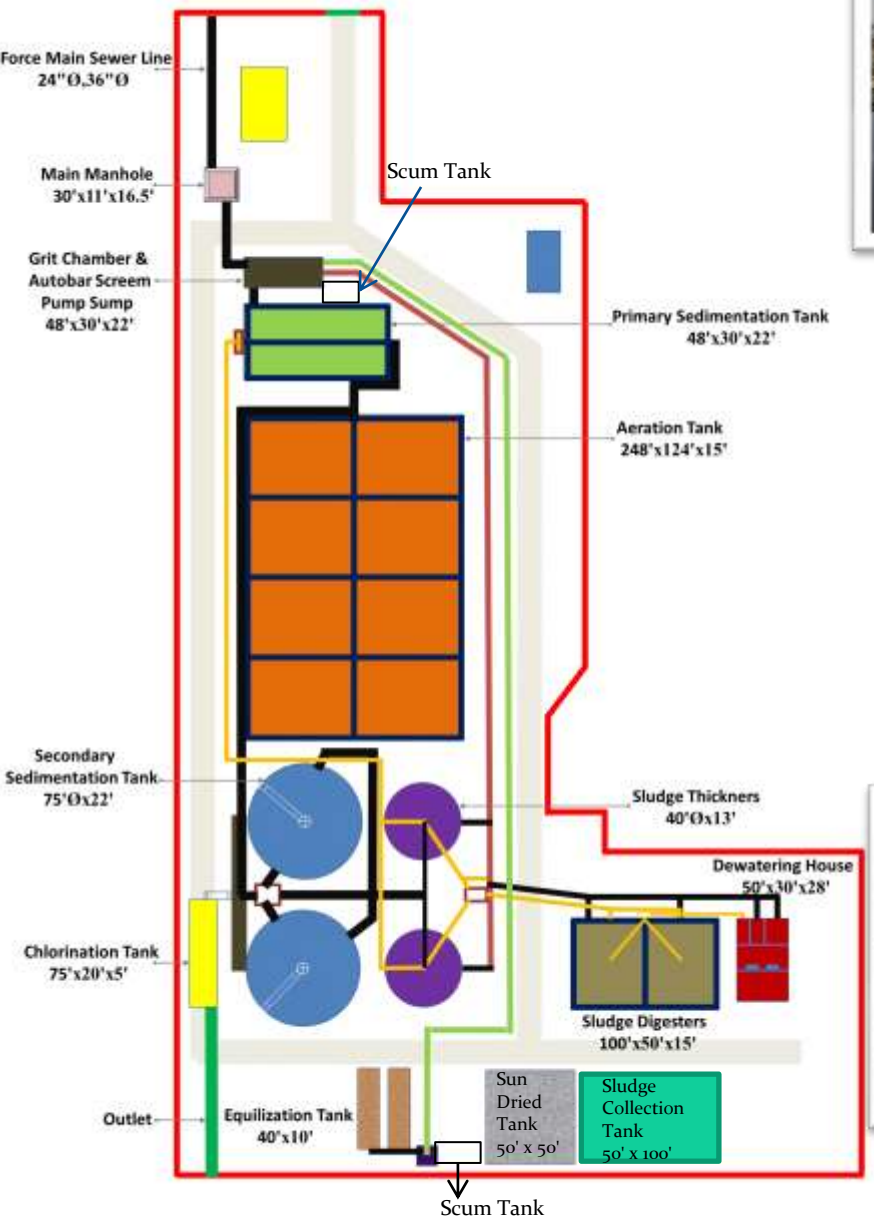
ရေဆိုးသန့်စင်မှုအဆင့်ဆင့် (Activated Sludge Process)



Layout plan of Treatment plant



Layout plan of Treatment plant

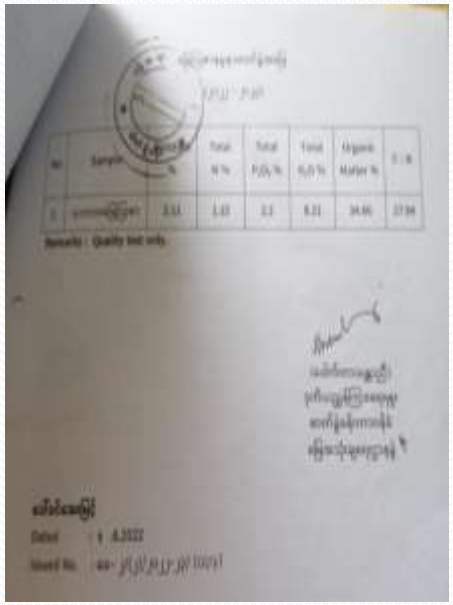


Sludge To Agriculture

Sludge

Sludge + သဲ + ဖုံ့

Sludge Test ပြုလုပ်ခြင်း



မွေသွေ့ နမူနာခါတုံ့အဖွင့

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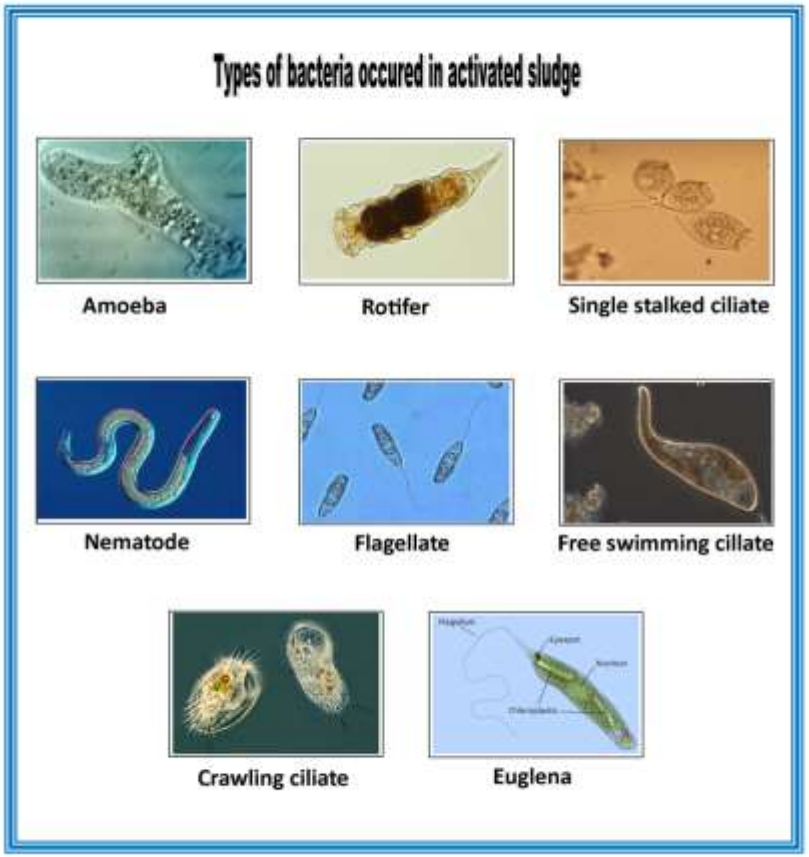
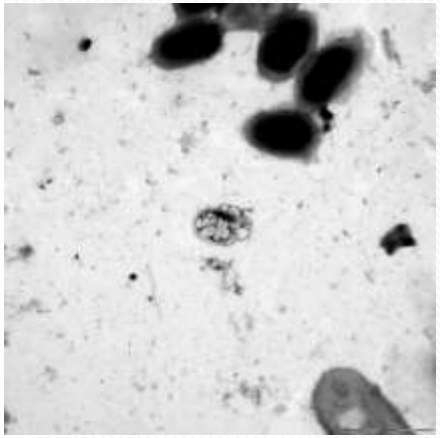
	Sample	Prameter	Result	Standard	Remark
1	သဘာဝမွေသွေ့	Moisture %	2.11	< 2	
		Total N %	1.12	3 ~ 5	
		Total P_2O5 %	2.2	3 ~ 5	
		Total K_2O %	0.21	3 ~ 5	
		Organic Matter %	34.66	> 20	
		C : N	17.94	< 20	

မ်တုခကြ။ ။ မွနုမာနိုငုံ

ခါတုမွေသွေ့သတုမ်တုခကြအရညအသွေးန်ပ့ ကိုကညီမှုရီပါသည်။

Micro-organism (Aerobic & Anaerobic Bacteria)





Anaerobic Type

Aerobic Type

Laboratory and Sanitation

- Wastewater Condition
- Hazardous waste Condition
- Laboratory Measurement
- Onsite Measurement
- Measurement Parameters

Wastewater Treatment Laboratory

Hazardous waste Condition






Laboratory Measurement

Onsite Measurement

Measuring Parameter in Wastewater Treatment Laboratory & Onsite System

No	Parameter	Units
1	BOD (Biochemical Oxygen Demand)	mg/l
2	COD (Chemical Oxygen Demand	mg/l
3	TSS (Total Suspended Solid)	mg/l
4	SVI (Sludge Volume Index)	mg/l
5	DSVI (Dilute Sludge Volume Index)	mg/l
6	pH (Potential of Hydrogen Ion)	-
7	DO (Dissolved Oxygen)	mg/l
8	TDS (Total Dissolved Solid)	mg/l
9	Turbidity	NTU
10	MLSS (Mixed Liquor Suspended Solids)	ml
11	Oil & Grease	mg/l
12	Total Nitrogen	mg/l
13	Total Phosphate	mg/l

No	Parameter	Units	Remark
1	pH (Potential of Hydrogen Ion)	-	Probe
2	DO (Dissolved Oxygen)	mg/l	Probe
3	TDS (Total Dissolved Solid)	mg/l	Probe
4	Turbidity	NTU	-
5	COD (Chemical Oxygen Demand)	mg/l	Pack Test
6	NH_4 (Ammonium)	mg/l	Pack Test
7	NO_3 (Nitrate)	mg/l	Pack Test
8	NO_2 (Nitrite)	mg/l	Pack Test
9	Transparency	ml/l	

Knowledge about Sanitation

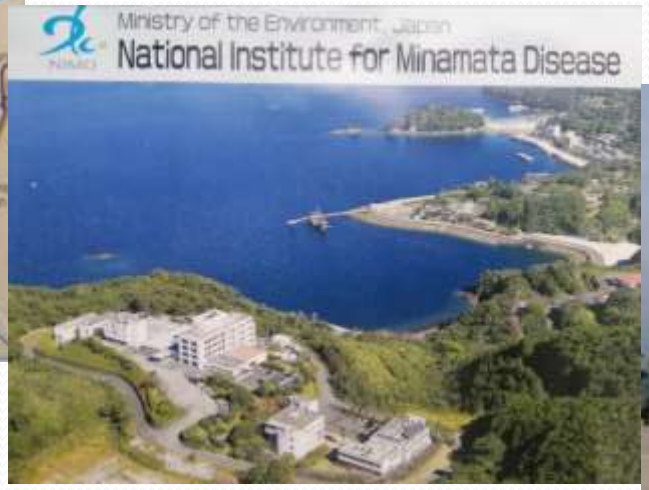
- Wastewater Nature
- Wastewater Depth
- Solid

Knowledge about Kitchen Waste

- Gray Water
- Grease Trap
- Solid Trap

Information regarding disposal points

- Effluent standard
- Environment Condition
- Industry Effluent (eg – Minamata Disease – 1971)



Guideline for Wastewater Laboratory

STANDARDS FOR DISCHARGE OF EFFLUENT

UNDER UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

(EPA) GUIDELINES

No.	PARAMETER	MAX; PERMISSIBLE LIMITS
1	pH	6.0 to 8.0
2	Oil and Grease	10 mg/l
3	Phosphate(total)	10 mg/l
4	Phosphate (soluble)	5.0 mg/l
5	TDS	1200 mg/l
6	Temperature	20 to 35°C
7	Total Suspended Solids	100mg/l
8	Turbidity	300 NTU
9	Nitrogen total	20 mg/l
10	COD	100 mg/l
11	BOD_5	50 mg/l

TDS – Total Dissolved Solids

COD – Chemical Oxygen Demand

BOD_5 – Biochemical Oxygen Demand

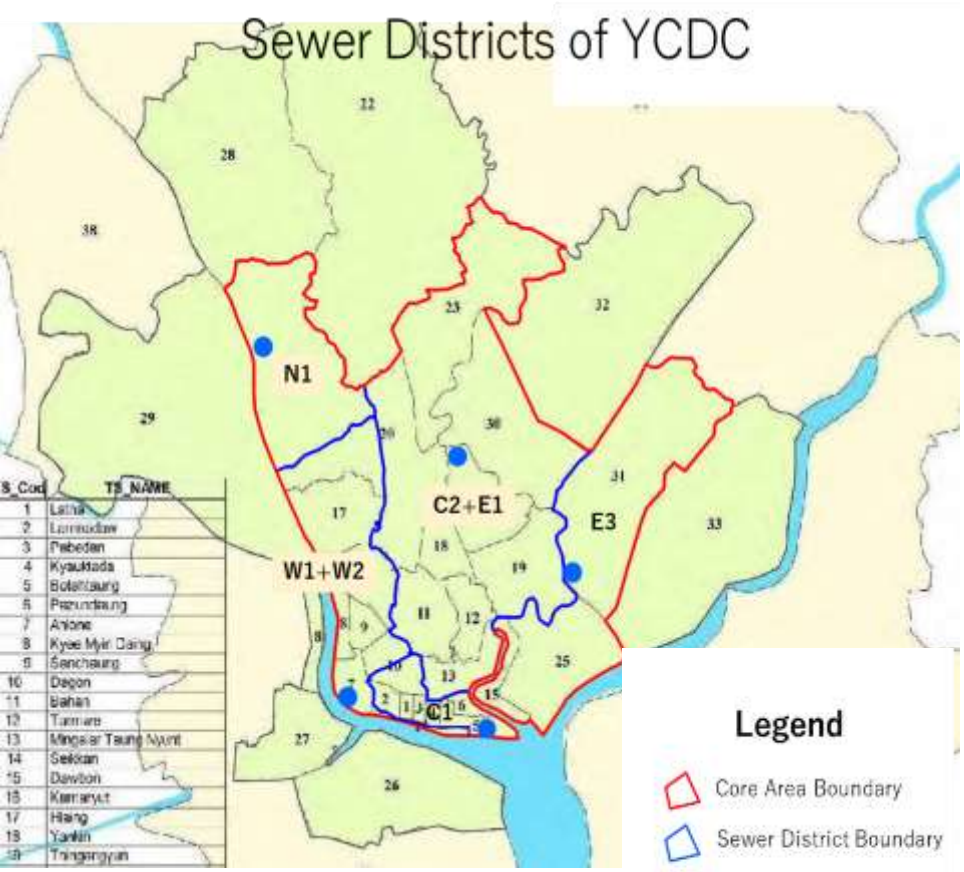
Location Plan of Sewerage System & Sewage Treatment Plants

South District
Operate (2006)
W.W.T.P (Thanhlatsoon)

Conclusion

- Pilot Small Scale Treatment for Vacuum Truck
- 50-100 m3 Small Treatment for each district of next plan
- Reduce , Reuse , Recycle

အနာဂတ်ရေဆိုးစွန်ပစ်မှုစီမံခန့်ခွဲမှုပုံစံ
(Centralized Treatment System)



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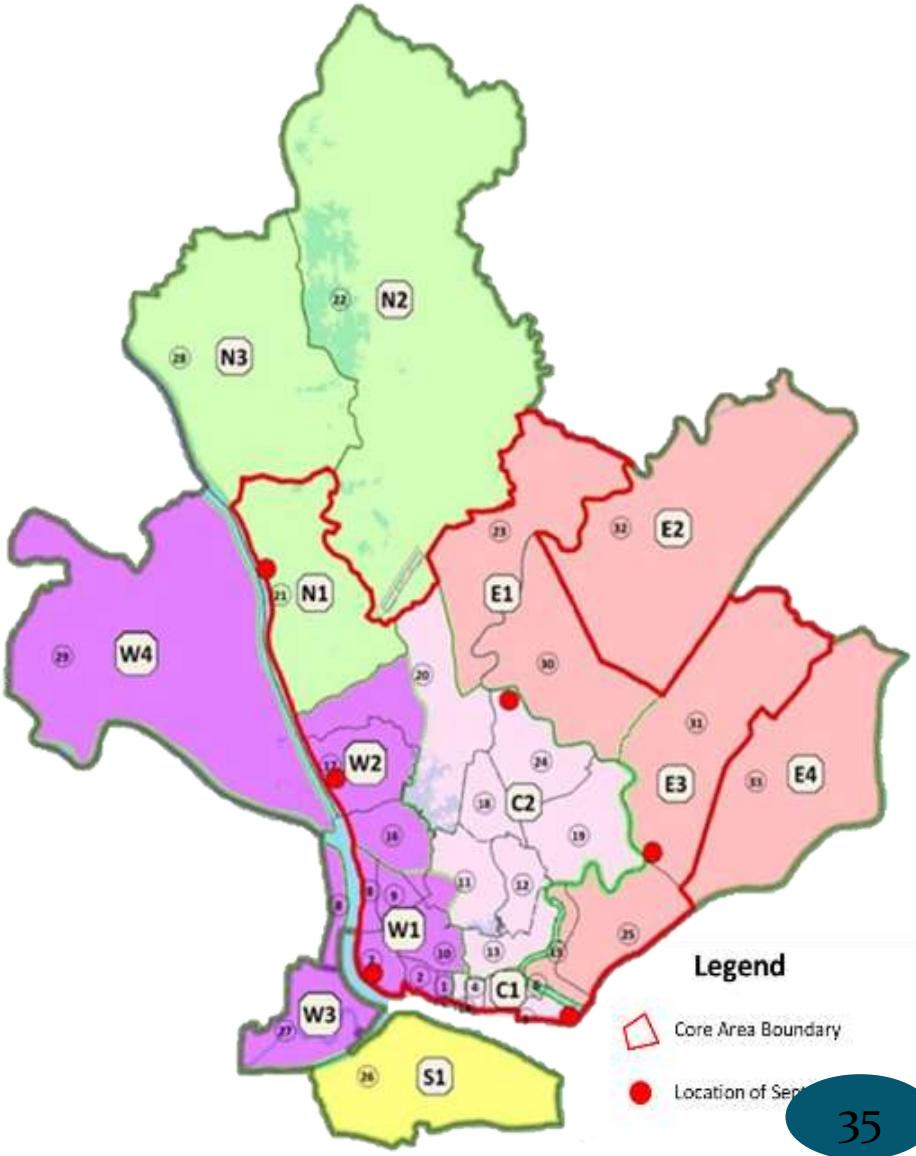
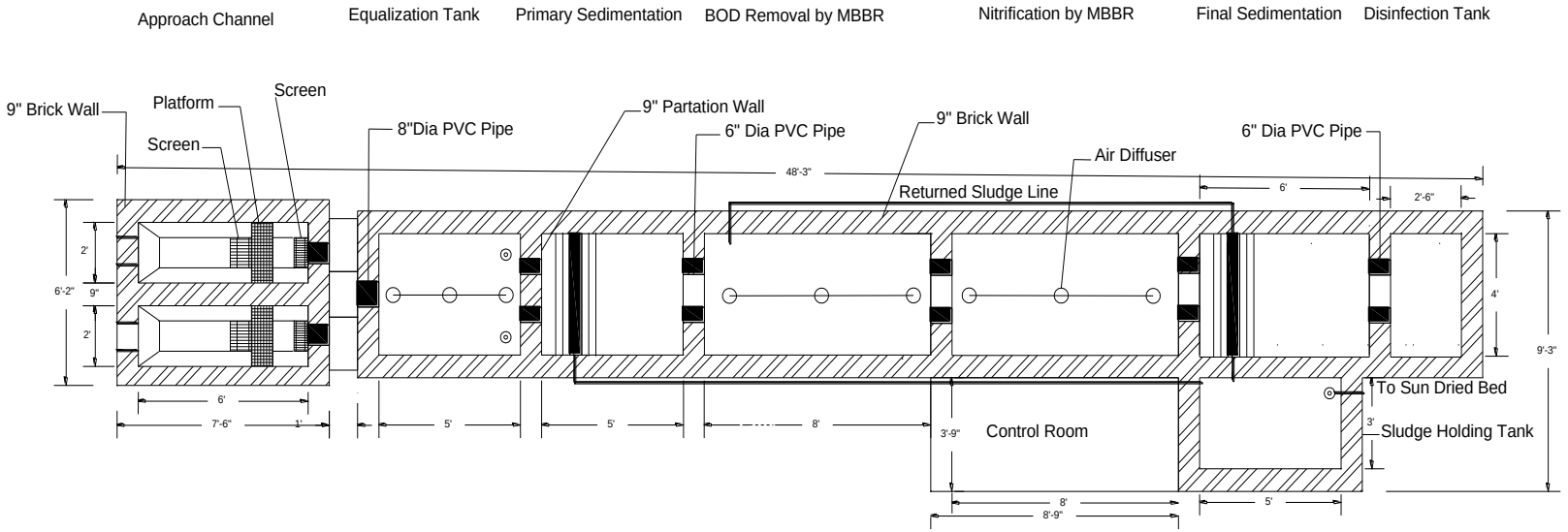
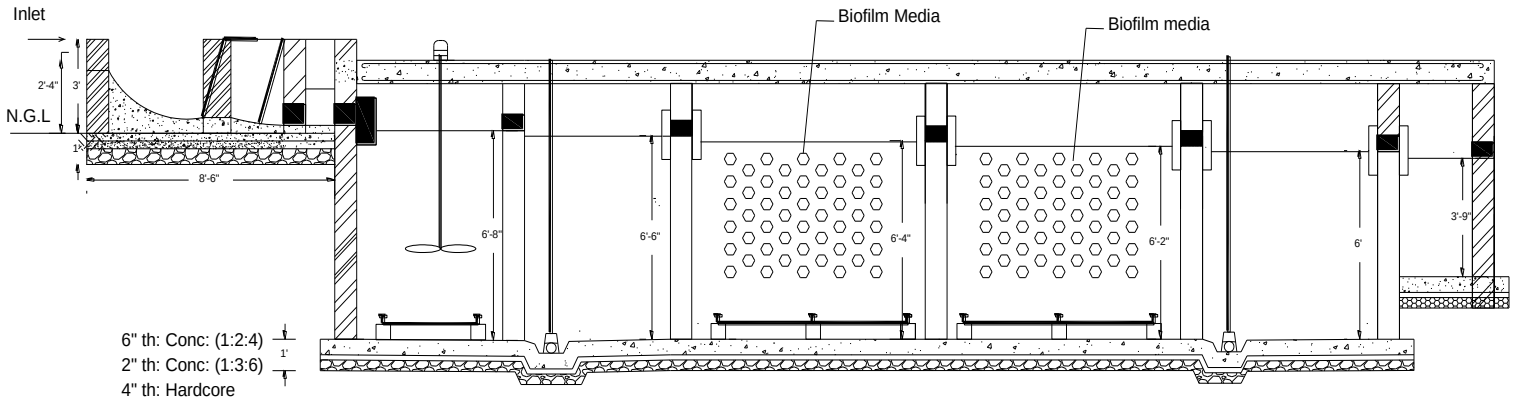
(Decentralized Treatment System)



Septage Treatment စနစ်အတွက်စမ်းသပ်ဆောင်ရွက်ခြင်း(Pilot Project)



Plan View



Cross Sectional View

- ရေဆိုးသန့်စင်စက်ရုံတွင်စမ်းသပ်လည်ပတ်လျက်ရှိသော ရေဆိုးသန့်စင်မှုစနစ် မှာMoving Bed Bio-Reactor (MBBR) ကိုအခြေပြုတည် ဆောက်ထားသော စနစ်တစ်ခုဖြစ်ပါသည်။

- THANK YOU