



BMA. Policies on Wastewater Management

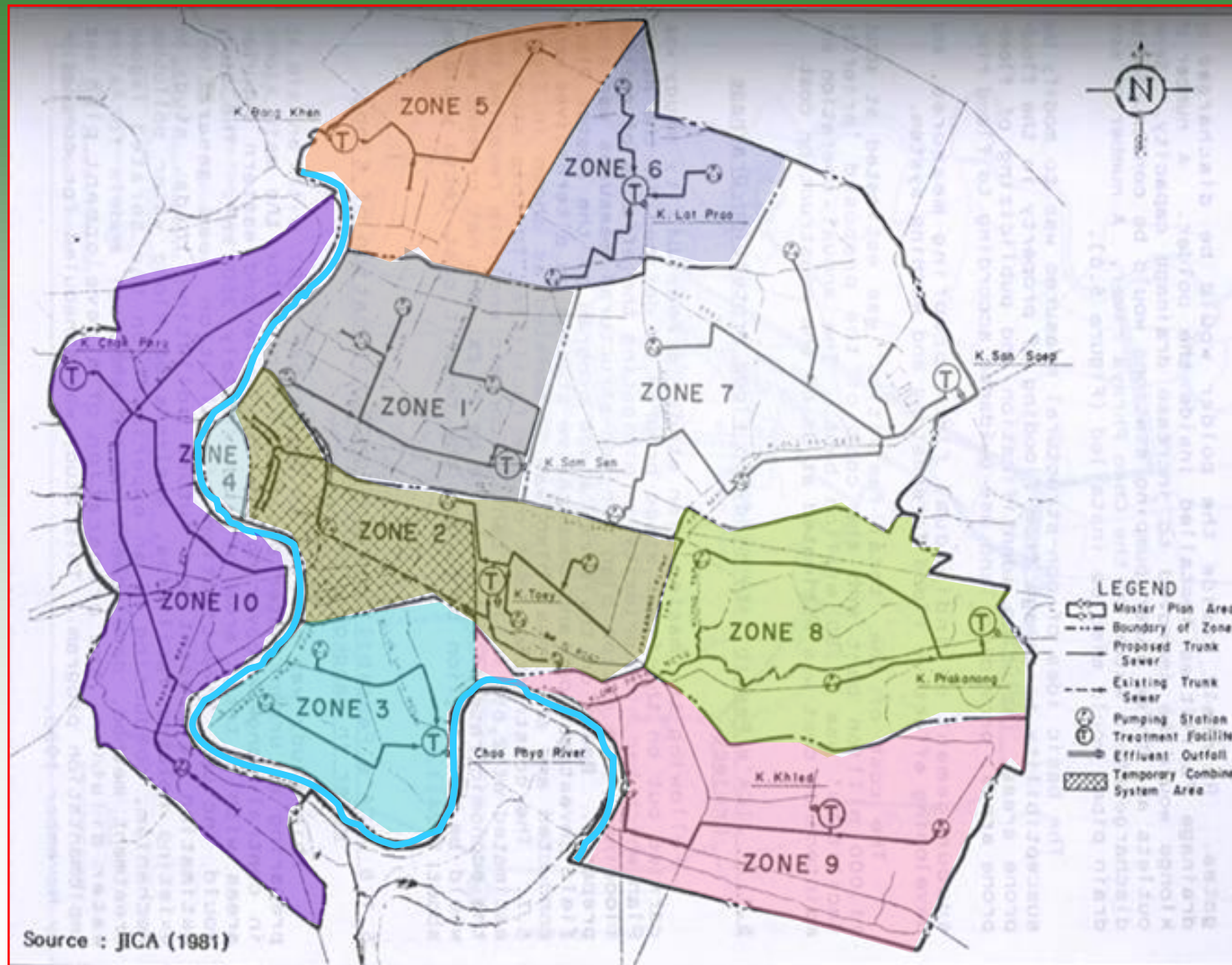
***Department of Drainage & Sewerage
Bangkok Metropolitan Administration***



BMA Master Plan

1981

Sewerage Master Plan
by JICA 37,000 ha
divided into 10 Zones

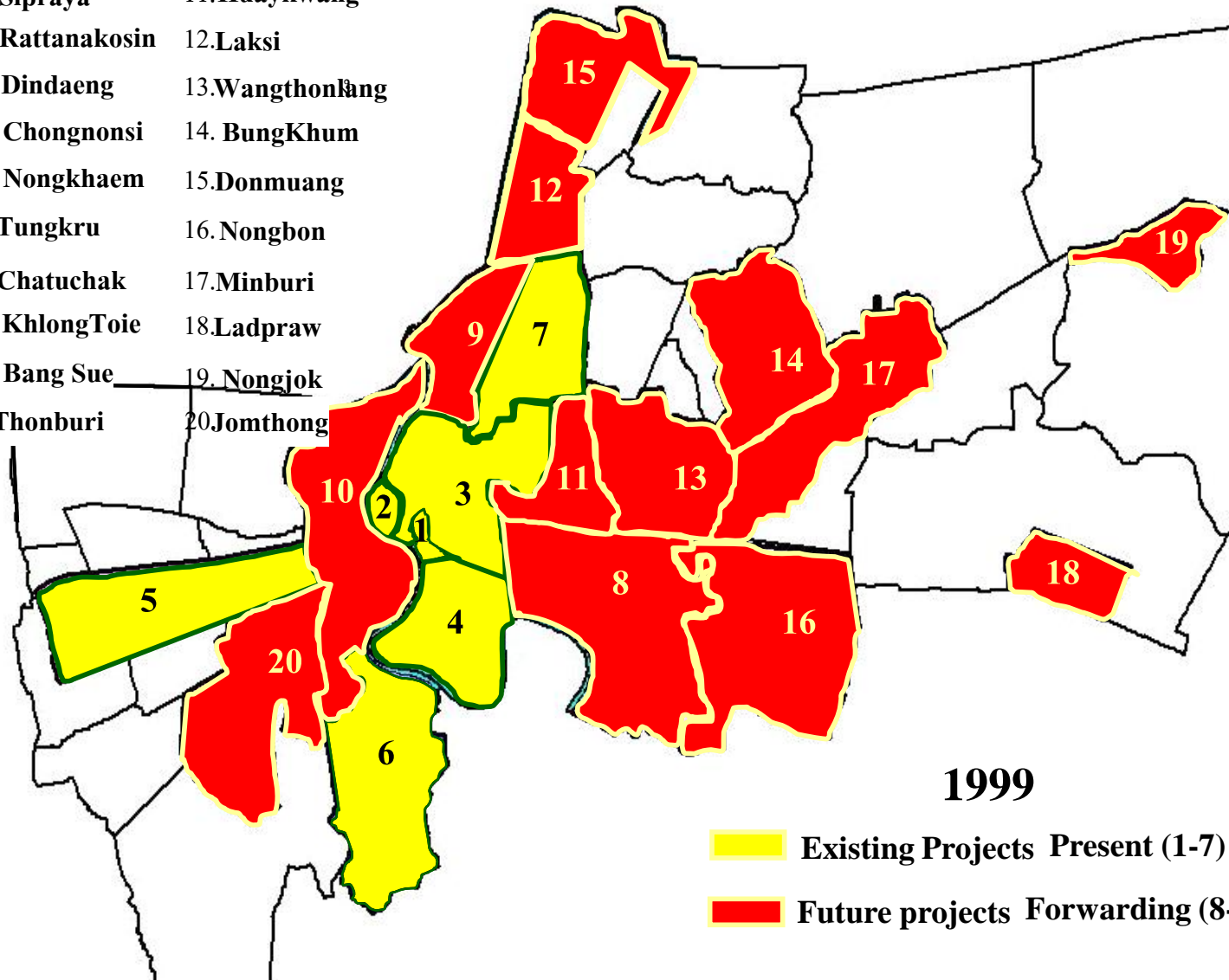




BMA Master Plan



- | | |
|-----------------|-------------------|
| 1. Sipraya | 11. Huaykwang |
| 2. Rattanakosin | 12. Laksi |
| 3. Dindaeng | 13. Wangthonglang |
| 4. Chongnonsi | 14. BungKhum |
| 5. Nongkhaem | 15. Donmuang |
| 6. Tungkru | 16. Nongbon |
| 7. Chatuchak | 17. Minburi |
| 8. KhlongToie | 18. Ladpraw |
| 9. Bang Sue | 19. Nongjok |
| 10. Thonburi | 20. Jomthong |



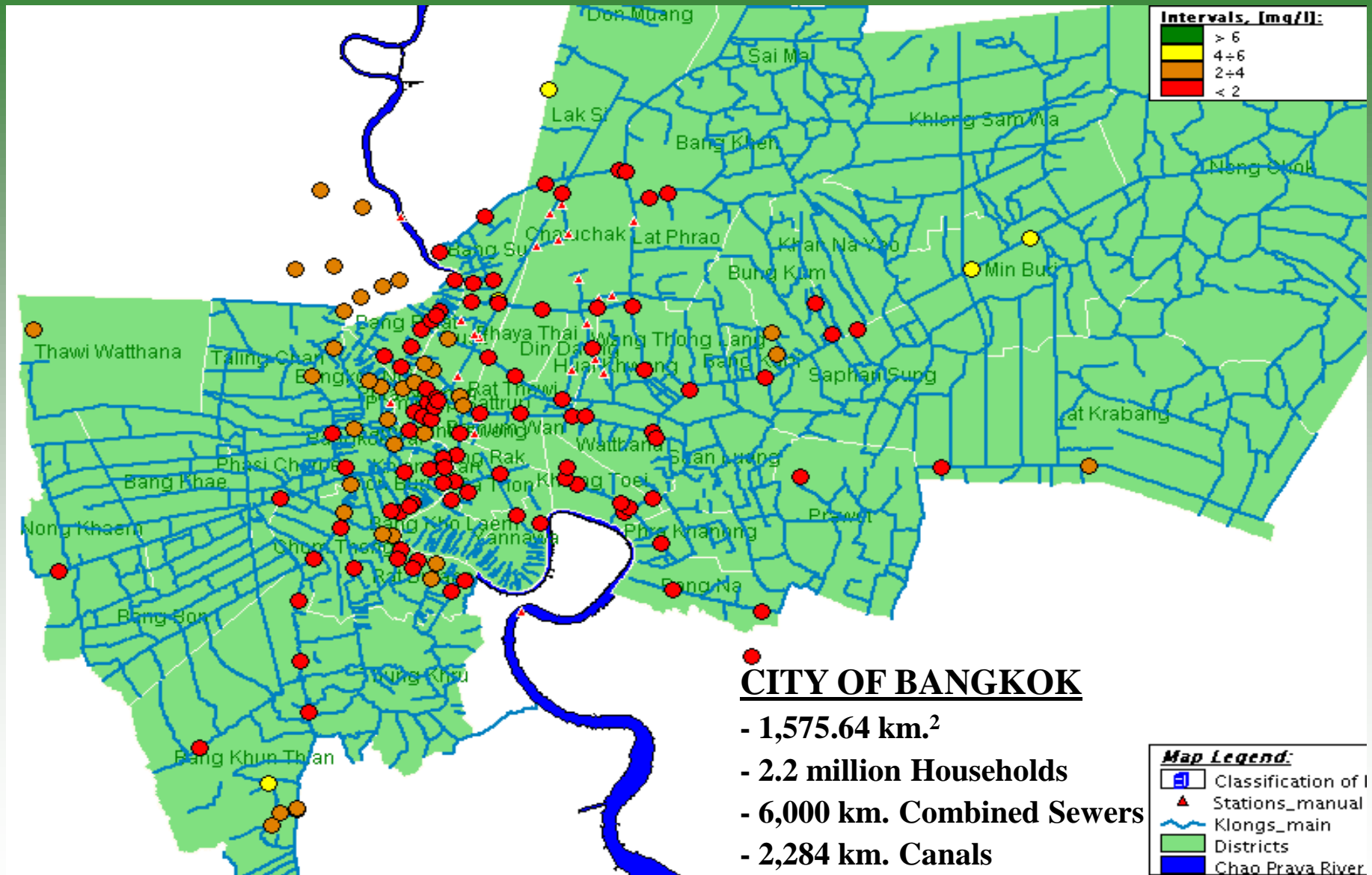
1999

- Existing Projects Present (1-7)
- Future projects Forwarding (8-13)

1999
Master Plan on
Sewage Sludge
Treatment / Disposal
and Reclaimed
Wastewater Reuse in
Bangkok
by JICA Propose
20 Zones in Bangkok



DO in major canals, mg/l



CITY OF BANGKOK

- 1,575.64 km.²
- 2.2 million Households
- 6,000 km. Combined Sewers
- 2,284 km. Canals
- 280 Sampling Points in 84 Main Canals



Existing 7 WWTPs



Bang Sue
(Under construction)



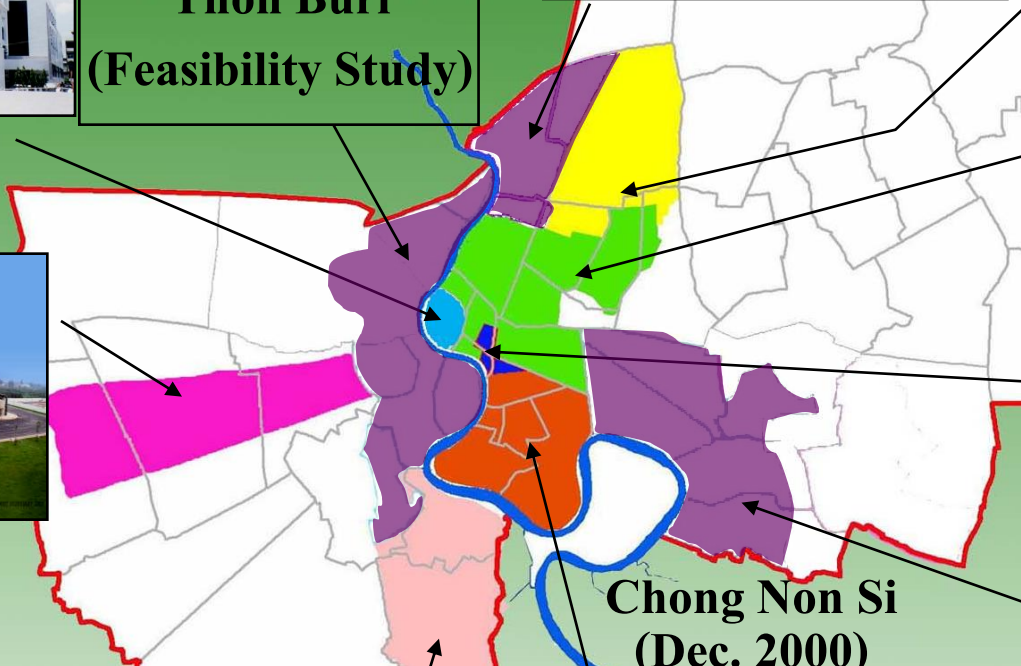
Cha Tu Chak
(Mar. 2005)

Thon Buri
(Feasibility Study)



Din Daeng
(Otc.2004)

Rattanakosin
(May 2000)



Si Phraya
(Jan. 1994)



Nong Khaem
(Feb. 2002)

Chong Non Si
(Dec. 2000)



Klong Toei
(Forwarding)

Thung Khru
(Feb. 2002)



0 2.5 5 10 15 Km.

Water Environment Control Plant	Area (km²)	Population	System	Capacity (m³/day)	Source of Fund	Cost (Million Baht)
Bangkok Wastewater Treatment Project					BMA. : GOV.	
1. Si Phraya	2.7	120,000	Contact Stabilization A.S.	30,000	BMA. 100 %	464
2. Rattanakosin	4.1	70,000	Two Stage A.S.	40,000	GOV. 100 %	883
3. Din Daeng	37	1,080,000	Activated Sludge	350,000	25 : 75	6,382
4. Chong Non Si	28.5	580,000	Cyclic Activated Sludge System	200,000	40 : 60	4,552
5. Nong Khaem	44	520,000	Vertical Loop Reactor A.S.	157,000	40 : 60	2,348
6. Thung Khru	42	177,000	Vertical Loop Reactor A.S.	65,000	40 : 60	1,760
7. Cha Tu Chak	33.4	432,000	Cyclic Activated Sludge System	150,000	60 : 40	3,482
8. Community Plant 12 Plants	-			25,700		
SUM	<u>191.7</u>	<u>2,979,000</u>		<u>1,017,700</u>		<u>19,871</u>
Future BMA. Wastewater Treatment Project						
1. Bang Sue EECF	21	250,000	Step Feed A.S.	120,000	BMA. 100 %	4,732
2. Klong Toei	56	485,000	Activated Sludge	360,000	60 : 40	9,896
3. Thon Buri	59	704,000	Activated Sludge	305,000		11,561
SUM	<u>136</u>	<u>1,439,000</u>		<u>785,000</u>		<u>26,189</u>



กรุงเทพมหานคร
BANGKOK METROPOLITAN ADMINISTRATION

Si Phraya Water Environment Control Plant

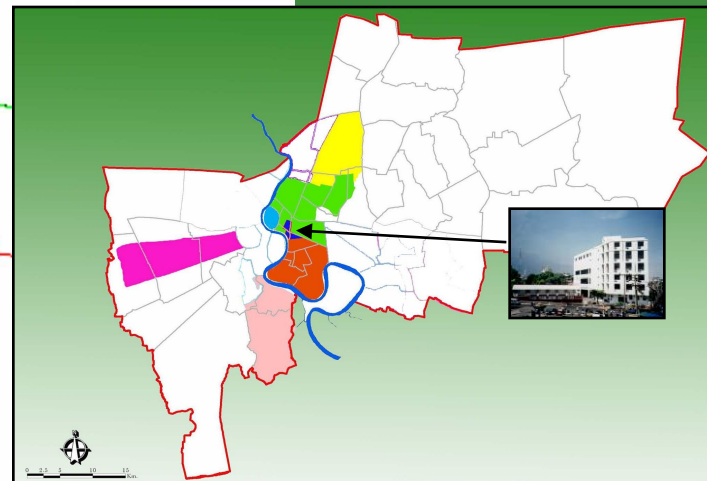
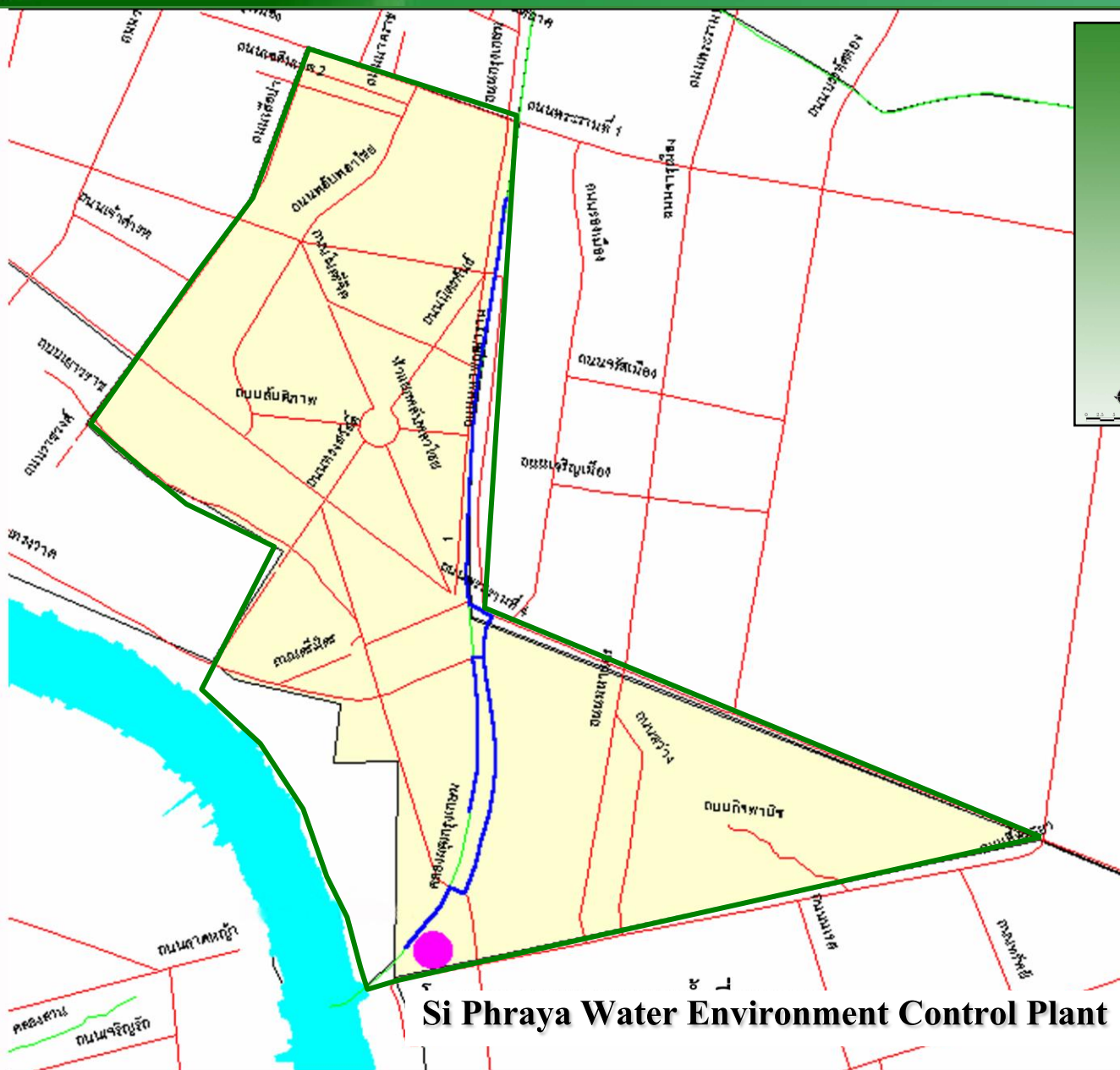


Service Area : 2.7 km.²
Population : 120,000
Capacity : 30,000 m.³/d.
Process : Contact
Stabilization
A.S.
Cost : 464 million ฿
Operated by : BMA. Officer

Operated since : Jan. 1994



Si Phraya Water Environment Control Plant



Collection System

Length : 3.475 km.
 No. of IC : 81
 Pumping Station : 1



กรุงเทพมหานคร
BANGKOK METROPOLITAN ADMINISTRATION

Rattanakosin Water Environment Control Plant



Service Area : 4.1 km.²
Population : 70,000
Capacity : 40,000 m³/d.
Process : Two Stage A.S.
Cost : 883 million ฿
Operated by : BMA. Officer

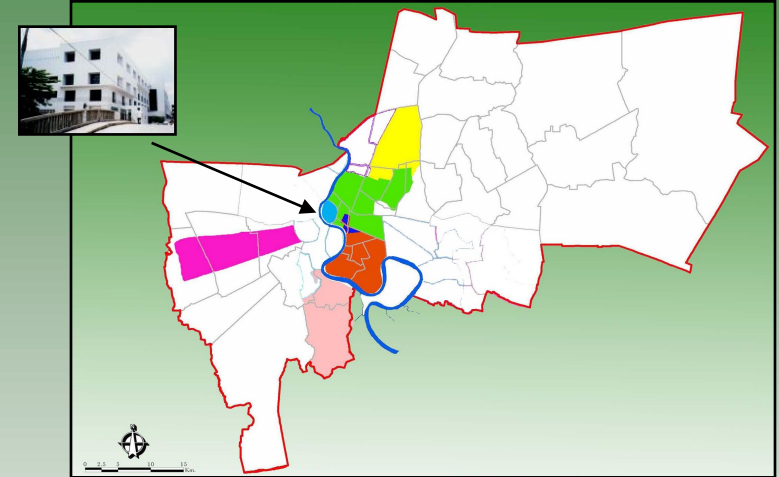
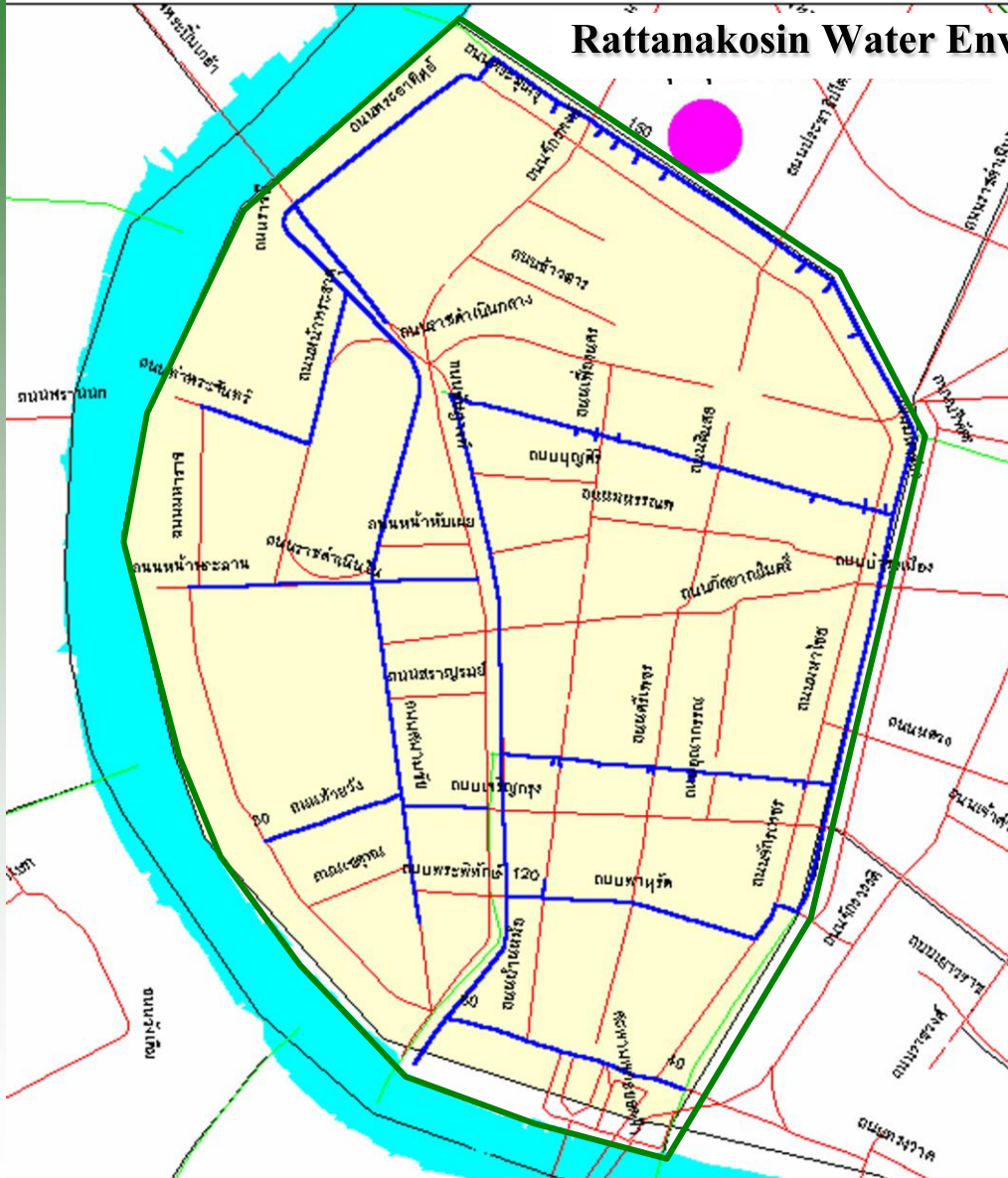
Operated since : May 2000



Rattanakosin Water Environment Control Plant



Rattanakosin Water Environment Control Plant



Collection System

Length : 10.25 km.
No. of IC : 77



กรุงเทพมหานคร
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Chong Non Si Water Environment Control Plant

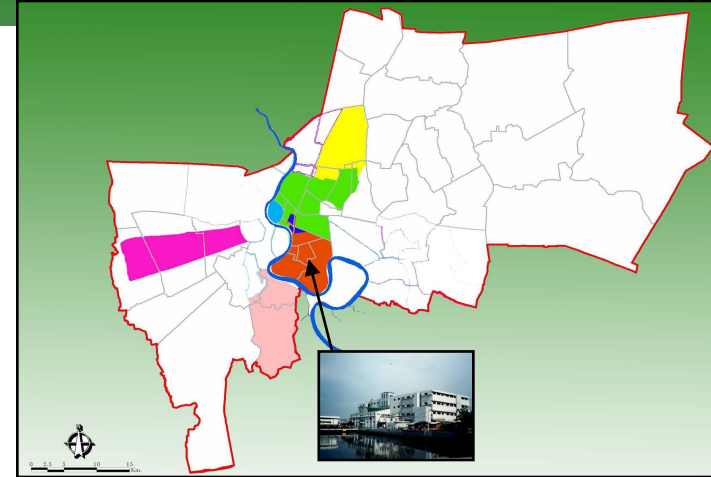
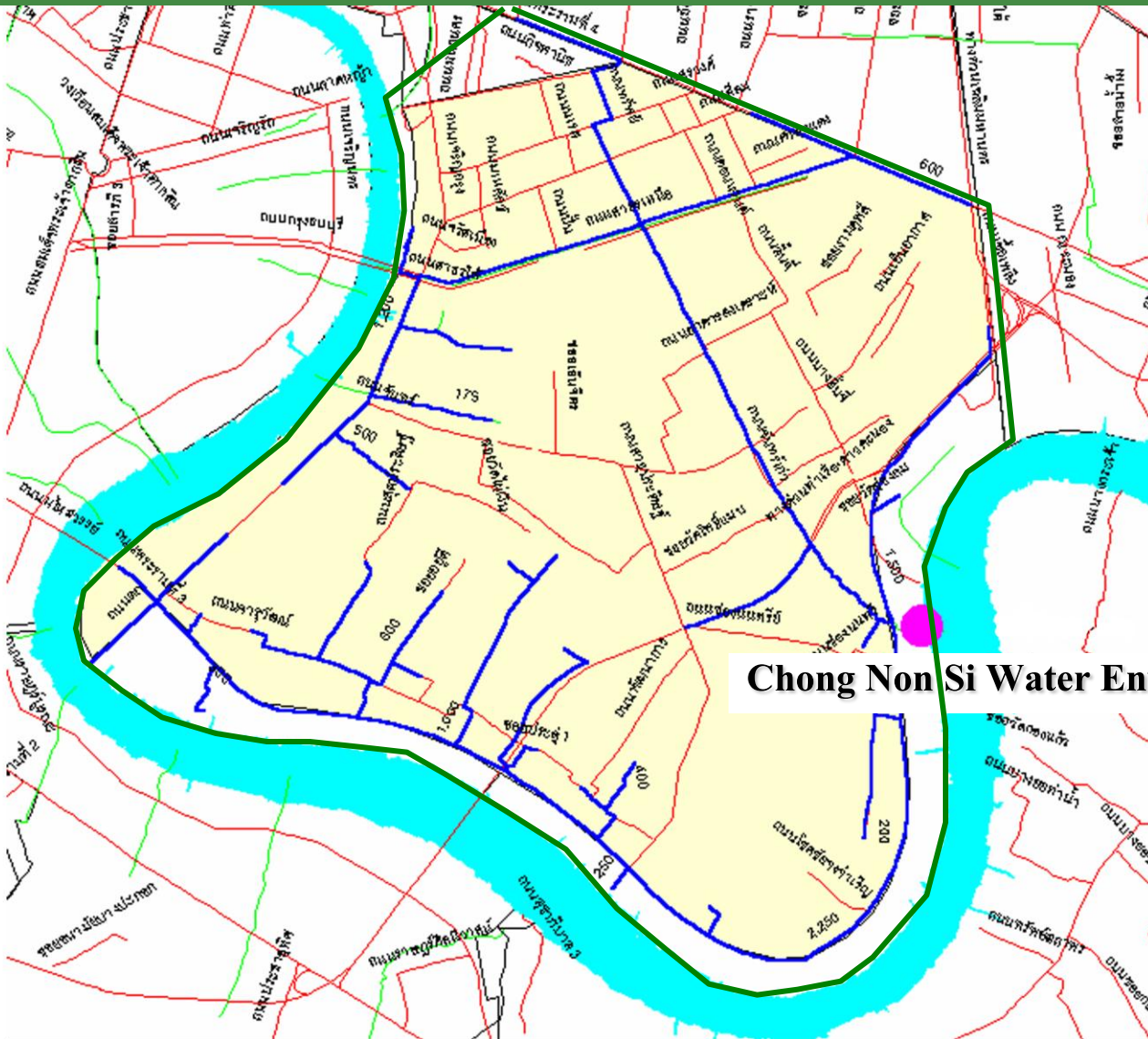


- Service Area : 28.5 km.²**
- Population : 580,000**
- Capacity : 200,000 m.³/d.**
- Process : Cyclic Activated
Sludge System**
- Cost : 4,552 million ฿**
- Operated by : Private Company**

Operated since : Dec. 2000



Chong Non Si Water Environment Control Plant



Chong Non Si Water Environment Control Plant

Collection System

- Length** : 51 km.
- No. of MH** : 555
- No. of IC** : 356
- Pumping Station** : 3



กรุงเทพมหานคร
BANGKOK METROPOLITAN ADMINISTRATION

Thung Khru Water Environment Control Plant



Service Area : 42 km.²

Population : 177,000

Capacity : 65,000 m.³/d.

**Process : Vertical Loop
Reactor A.S.**

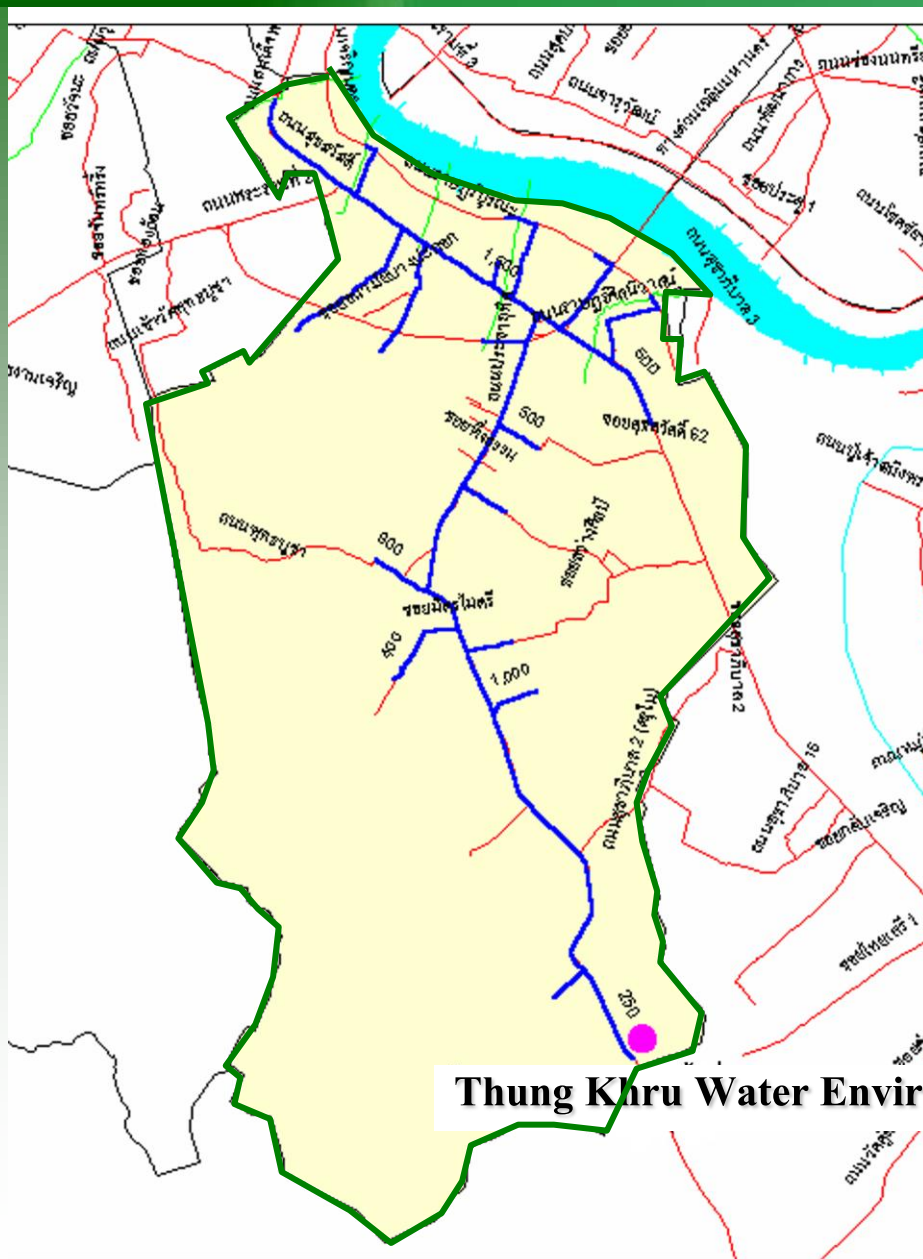
Cost : 1,760 million ฿

Operated by : Private Company

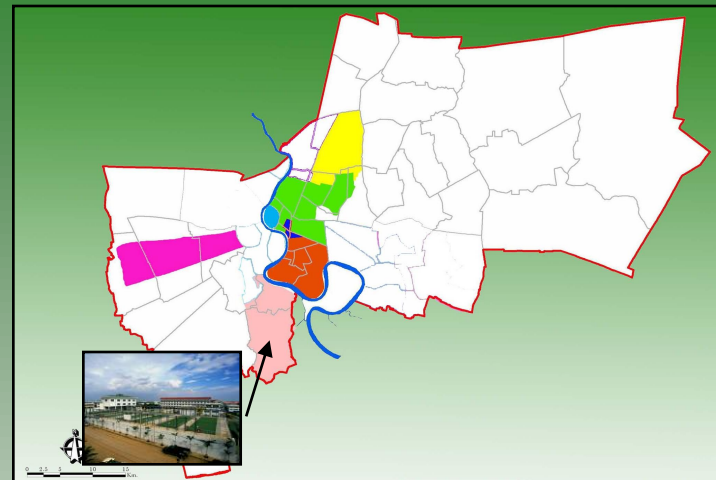
Operated since : Feb.2002



Thung Khru Water Environment Control Plant



Thung Khru Water Environment Control Plant



Collection System

- Length** : 26 km.
- No. of MH** : 214
- No. of IC** : 204
- Pumping Station** : 4



Nong Khaem Water Environment Control Plant



Operated since : Feb.2002

Service Area : 44 km.²

Population : 520,000

Capacity : 157,000 m.³/d.

Process : Vertical Loop

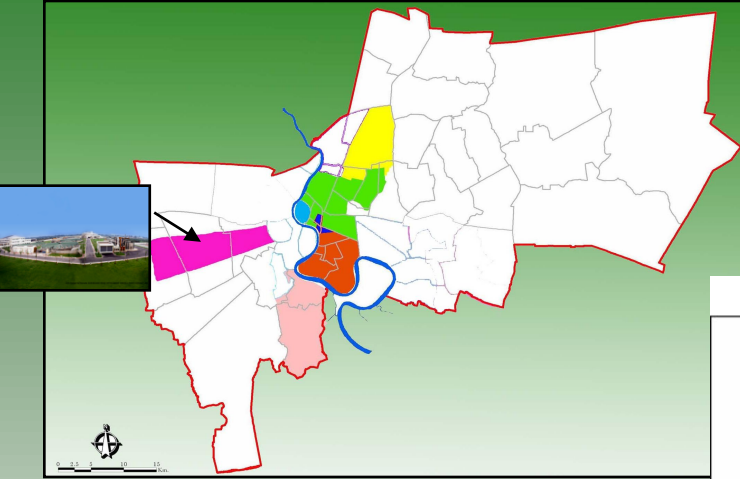
Reactor A.S.

Cost : 2,348 million B

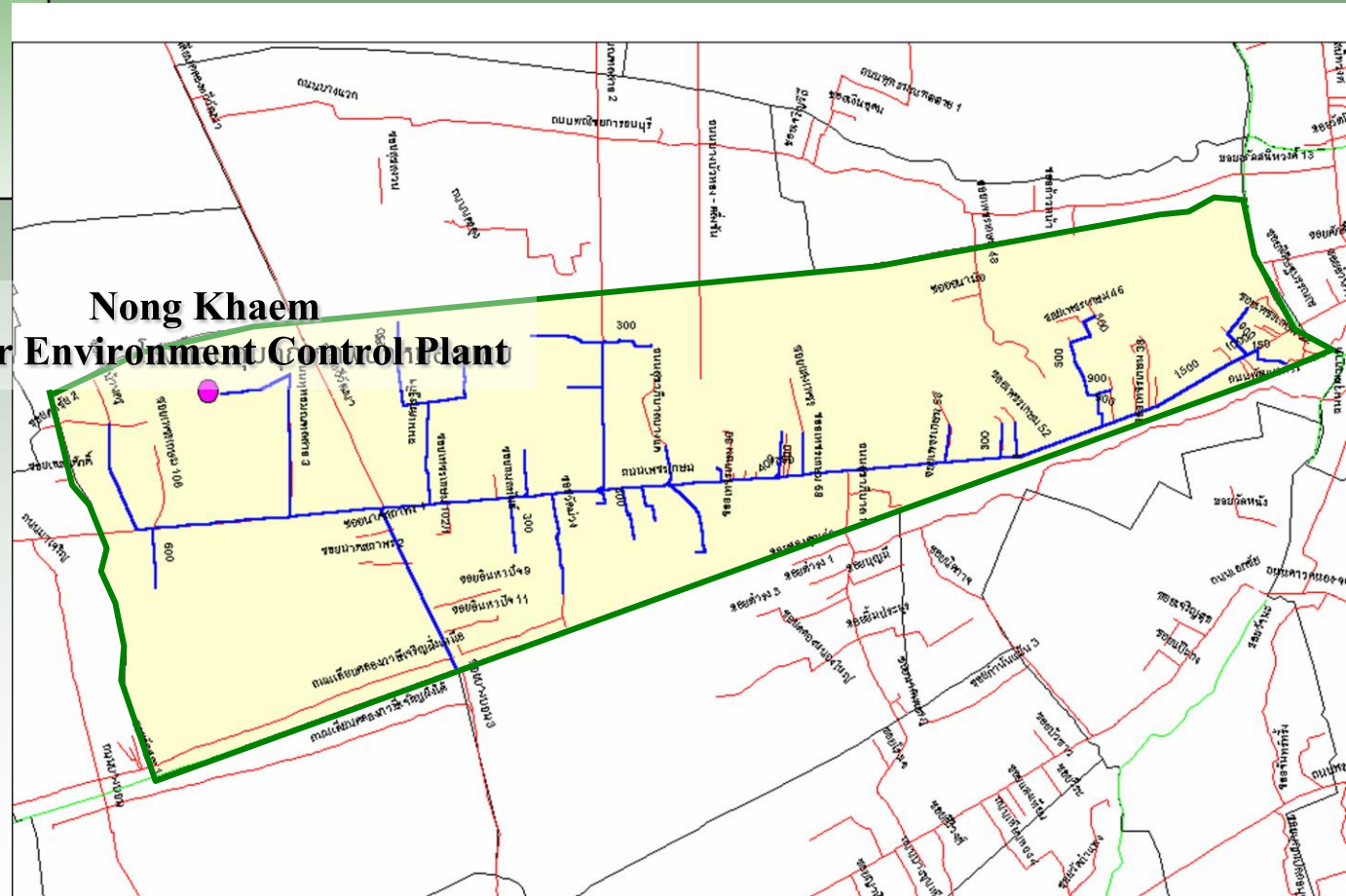
Operated by : Private Company



Nong Khaem Water Environment Control Plant



Nong Khaem Water Environment Control Plant



Collection System

- Length : 46 km.
- No. of MH : 411
- No. of IC : 229
- Pumping Station : 8



กรุงเทพมหานคร
BANGKOK METROPOLITAN ADMINISTRATION

Din Daeng Water Environment Control Plant

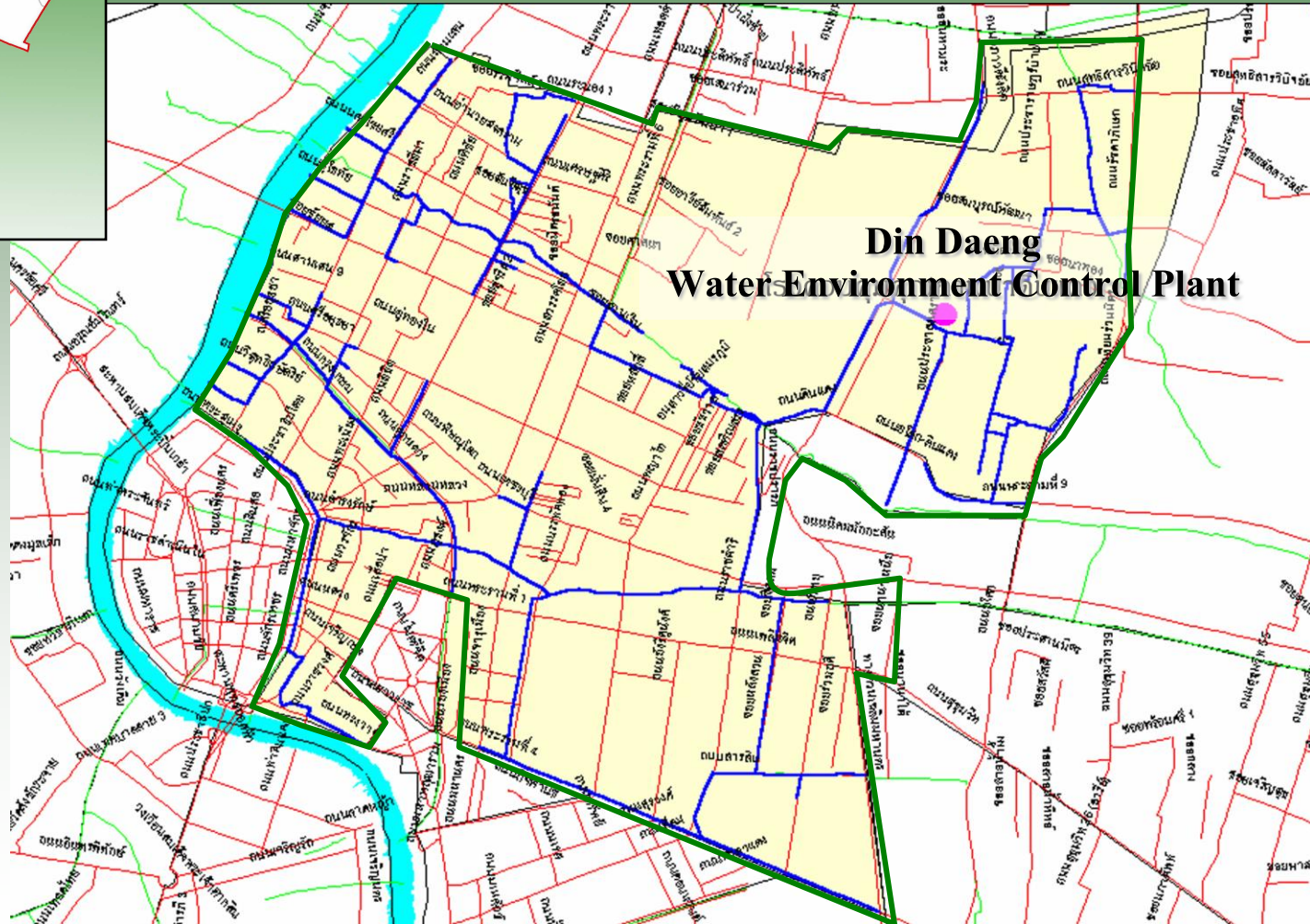
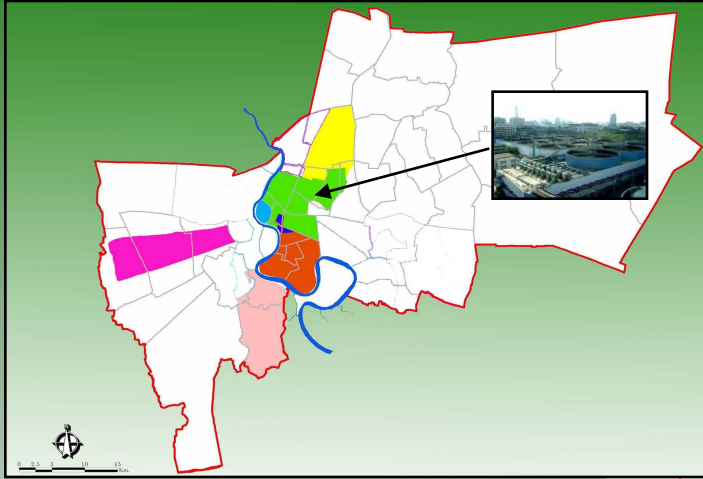


- Service Area** : 37 km.²
- Population** : 1,080,000
- Capacity** : 350,000 m.³/d.
- Process** : Activated Sludge
- Cost** : 6,382 million ฿
- Operated by** : Private Company

Operated since : Oct. 2004



Din Daeng Water Environment Control Plant



Collection System

- Length : 63 km.
- No. of MH : 964
- No. of IC : 418
- Pumping Station : 7



Cha Tu Chak Water Environment Control Plant



Operated since : Mar. 2005

Service Area : 33.4 km.²

Population : 432,000

Capacity : 150,000 m.³/d.

Process : Cyclic Activated

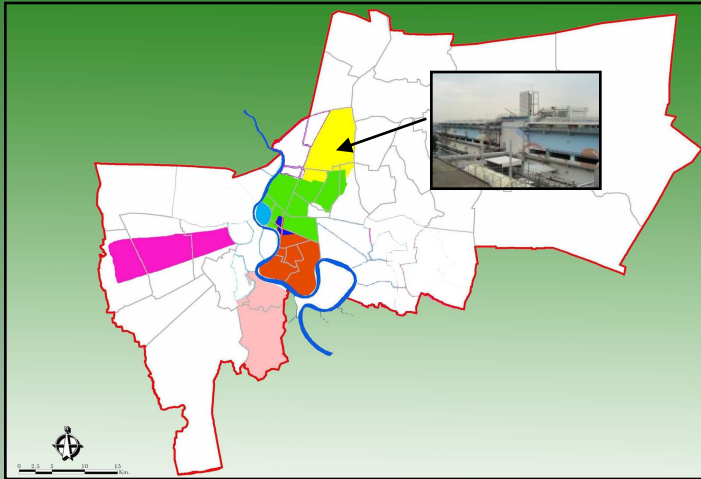
Sludge System

Cost : 3,482 million ฿

Operated by : Private Company

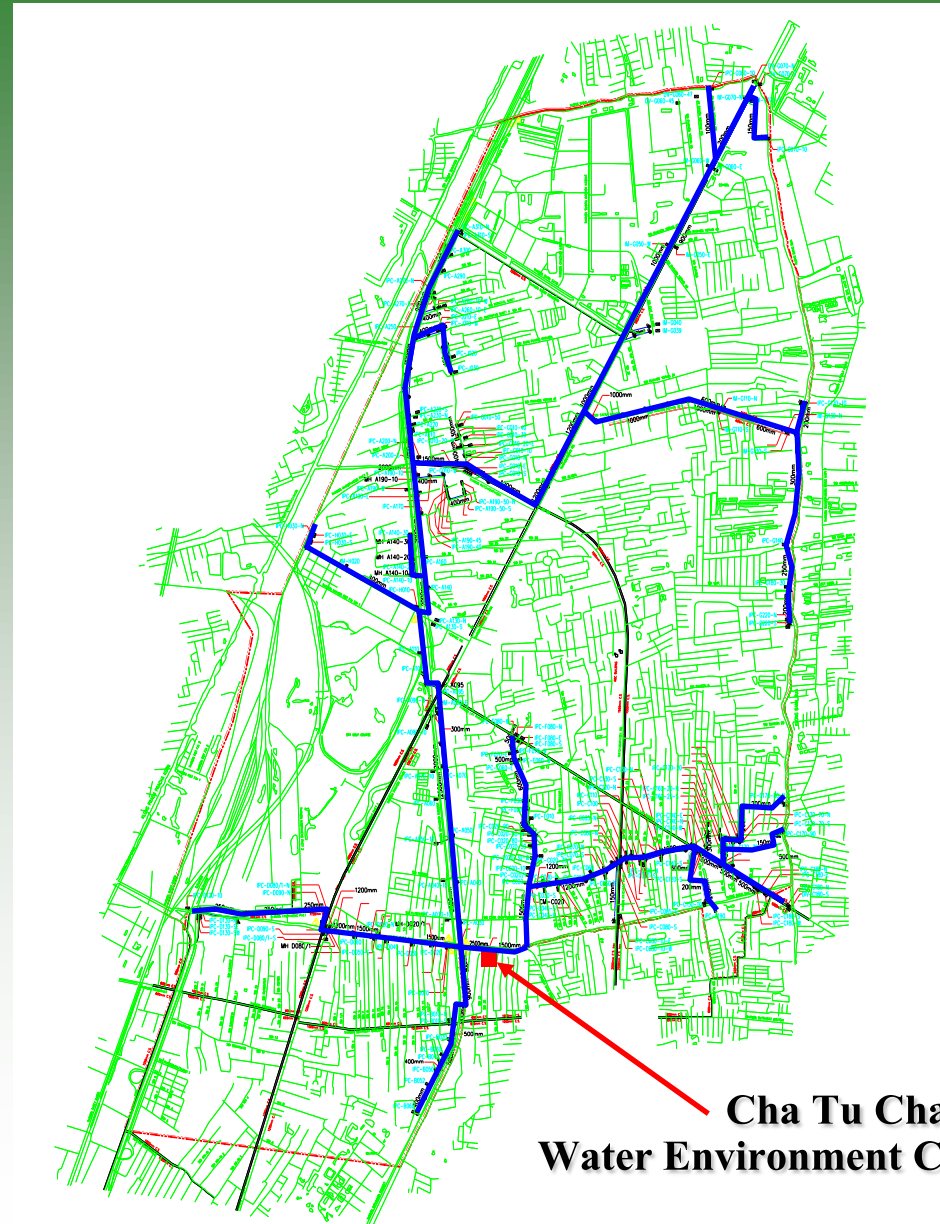


Cha Tu Chak Water Environment Control Plant



Collection System

Lengths : 37.5 km.
No. of MH : 168
No. of IC : 212
Pumping Station : 13



Cha Tu Chak
Water Environment Control Plant



Future BMA. Wastewater Treatment Project



Bang Sue EECF

Area : 21 km.²

Capacity : 120,000 m³/day

Status : Bidding

Thon Buri WWTP

Area : 59 km.²

Capacity : 337,000 m³/day

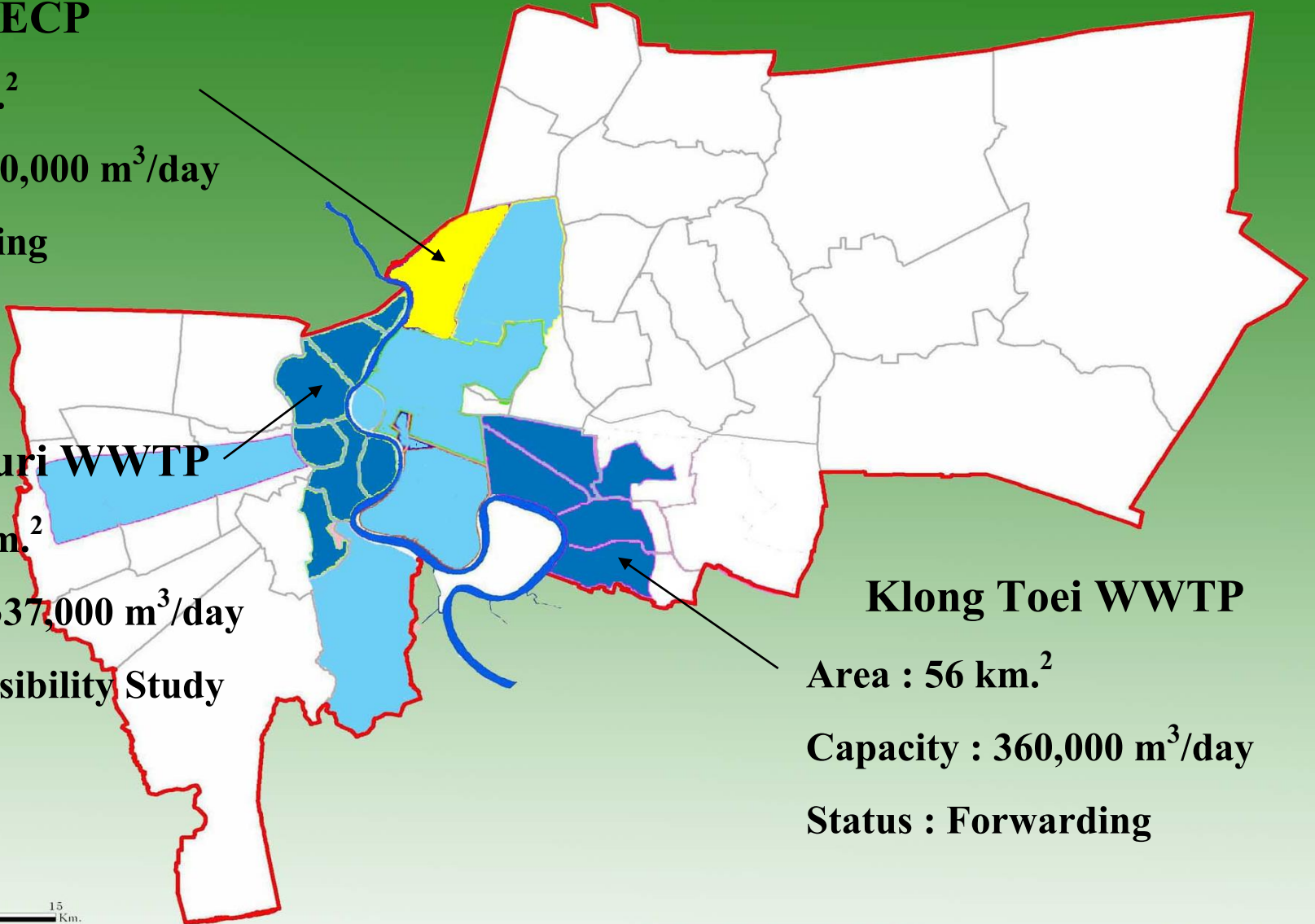
Status : Feasibility Study

Klong Toei WWTP

Area : 56 km.²

Capacity : 360,000 m³/day

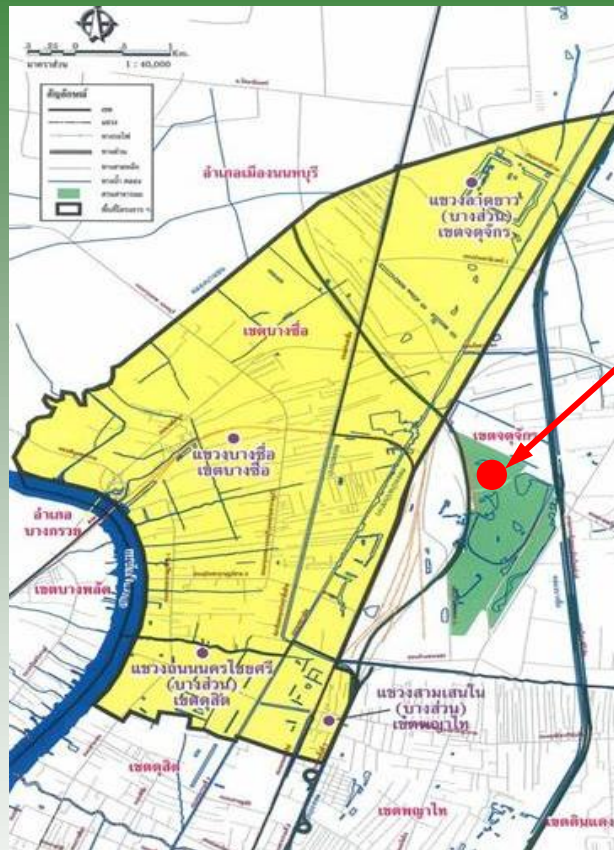
Status : Forwarding





กรุงเทพมหานคร
BANGKOK METROPOLITAN ADMINISTRATION

Bang Sue Environmental Education and Conservation Project



Bang Sue Environmental Education and Conservation Center

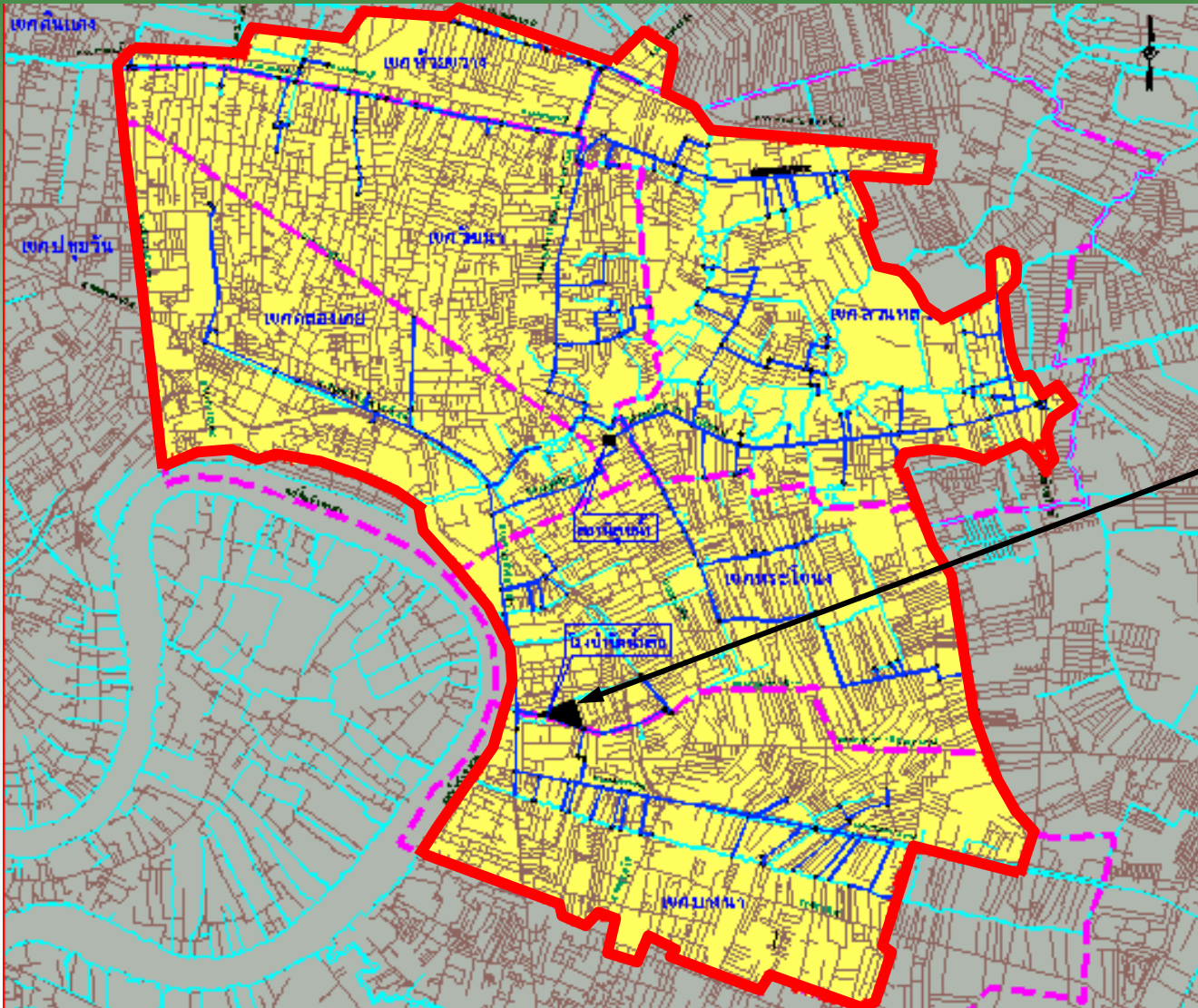
Area : 21 km.²

Capacity : 120,000 m.³/day

Status : Bidding



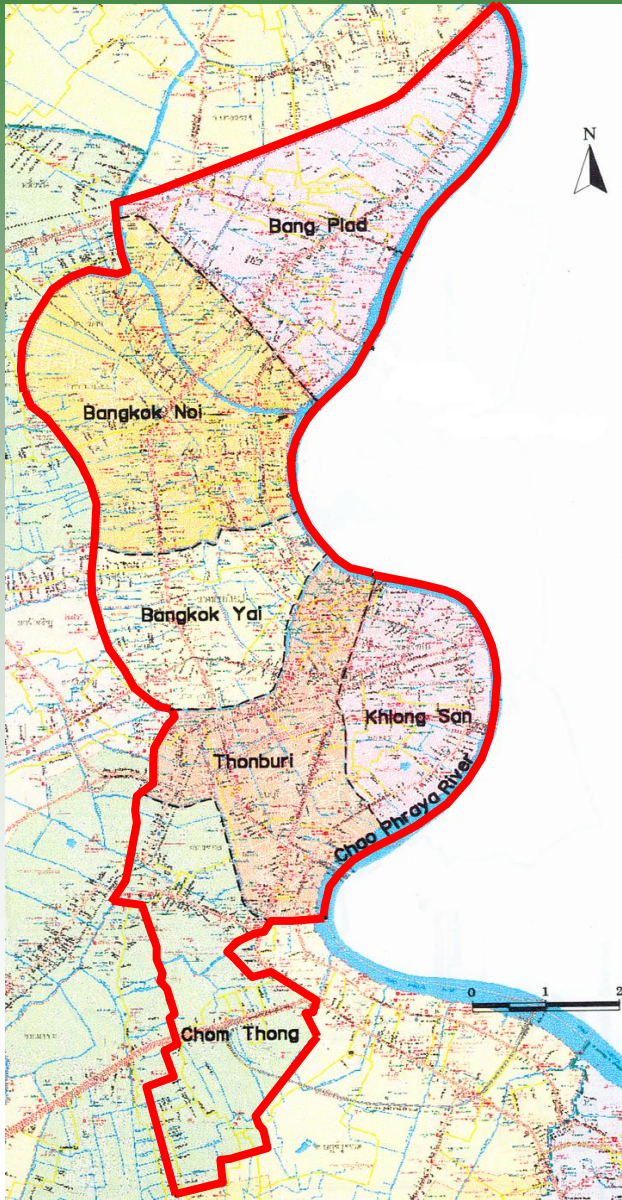
Klong Toei Wastewater Treatment Project



Klong Toei WWTP

Area : 56 km.²
Capacity : 360,000 m.³/d.
Status : Forwarding

— Collection System



Thon Buri WWTP

Area : 59 km.²

Capacity : 337,000 m.³/day

Status : Feasibility Study



Thank You For Your Attention

