THE KINGDOM OF CAMBODIA
MINISTRY OF WATER RESOURCES AND METEOROLOGY

DATA COLLECTION SURVEY ON IRRIGATION AND FLOOD PROTECTION IN THE KINGDOM OF CAMBODIA

FINAL REPORT
APPENDIX

AUGUST 2024

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

SANYU CONSULTANTS INC.

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Appendix

Contents

Appendix I

Result of Farmers' Socio Economic Survey

Contents

Evaluation Survey Format (For farmer who did not fill baseline survey format)

I-1. Survey Format

Serial No.	

Date:	Enumerator:

1. Interviewee

Name:	Age:	Contact:
Village/address:	District:	Province:
Name of FWUC:	Name of Cooperative:	

2. Family members (those who live together in the same house)

No.	1	2	3	4	5	6	7	8	9	10
Male (M) /Female (F)										
Age										
Household Head (please check)										
Main Profession / School Type (if a member is a student)										
Engaged in Farming (FT: Full Time / PT: Part time / No)										

*If students are doing agriculture work, please describe it in "Engaged in Farming"

3. Farming information

1) Landholding and farming area

Type	1. Own	2. Rent from others*	3. Total (1+2)	Rent out to others
Area size (ha)		Area: ha Rent Riel/season	ha	Area: ha Rent Riel/season
Irrigation Scheme Name (if utilized)				

Evaluation Survey Format (For farmer who did not fill baseline survey format)

4. Assets for Agriculture

Machine	Number	HP	Purchased year	Price (Riel)
Diesel Pump				
Electric Pump				
Tractor				
Harvester				
Other ( )				
Other ( )				

5. Production Trend

Season1 (1. Early Wet, 2. Wet, 3. Early Dry, 4. Dry, 5. Permanent)						Season2 (1. Early Wet, 2. Wet, 3. Early Dry, 4. Dry, 5. Permanent)					
Irrigation Type: Gravity / Small Pump / Sprinkler						Irrigation Type: Gravity / Small Pump / Sprinkler					
Year	Main Crop	Area (ha)	Yield (kg)	Flood Damage (ha)	Drought Damage (ha)	Year	Main Crop	Area (ha)	Yield (kg)	Flood Damage (ha)	Drought Damage (ha)
2019						2019					
2020						2020					
2021						2021					
2022						2022					
2023						2023					

Season3 (1. Early Wet, 2. Wet, 3. Early Dry, 4. Dry, 5. Permanent)						Season4 (1. Early Wet, 2. Wet, 3. Early Dry, 4. Dry, 5. Permanent)					
Irrigation Type: Gravity / Small Pump / Sprinkler						Irrigation Type: Gravity / Small Pump / Sprinkler					
Year	Main Crop	Area (ha)	Yield (kg)	Flood Damage (ha)	Drought Damage (ha)	Year	Main Crop	Area (ha)	Yield (kg)	Flood Damage (ha)	Drought Damage (ha)
2019						2019					
2020						2020					
2021						2021					
2022						2022					
2023						2023					

6. Water Disaster

6.1 How often does water shortage happen?

Crop Season	1. Never	2. Seldom (1 in 5-10 years)	3. Sometimes (1 in 3-5 years)	4. Almost Every Year
Early Wet	1	2	3	4
Wet	1	2	3	4
Early Dry	1	2	3	4
Dry	1	2	3	4
Permanent	1	2	3	4

6.2 How did you solve/mitigate the water shortage?

6.3 How often does flood occur?

Crop Season	1. Never	2. Seldom (1 in 5-10 years)	3. Sometimes (1 in 3-5 years)	4. Almost Every Year
Early Wet	1	2	3	4
Wet	1	2	3	4
Early Dry	1	2	3	4
Dry	1	2	3	4
Permanent	1	2	3	4

6.4 How did you solve/mitigate the flood damage?

7. Irrigation Cost (Operation Cost/Season)

Season	Area (ha)	Canal/Pond	Pump Operation	Fuel ( ) riel/litter	Lubricant ( ) riel/litter
Season1					
1. Early Wet		Canal water	( ) hours/day/pump ( ) times/season	( ) litter/times	( ) time/season ( ) Litter/time
2. Wet					
3. Early Dry		Pond water	( ) hours/day/pump ( ) times/season	( ) litter/times	( ) time/season ( ) Litter/time
4. Dry					
5. Permanent		Groundwater	( ) hours/day/pump ( ) times/season	( ) litter/times	( ) time/season ( ) Litter/time
Season2					
1. Early Wet		Canal water	( ) hours/day/pump ( ) times/season	( ) litter/times	( ) time/season ( ) Litter/time
2. Wet					
3. Early Dry		Pond water	( ) hours/day/pump ( ) times/season	( ) litter/times	( ) time/season ( ) Litter/time
4. Dry					
5. Permanent		Groundwater	( ) hours/day/pump ( ) times/season	( ) litter/times	( ) time/season ( ) Litter/time
Season3					
1. Early Wet		Canal water	( ) hours/day/pump ( ) times/season	( ) litter/times	( ) time/season ( ) Litter/time
2. Wet					
3. Early Dry		Pond water	( ) hours/day/pump ( ) times/season	( ) litter/times	( ) time/season ( ) Litter/time
4. Dry					
5. Permanent		Groundwater	( ) hours/day/pump ( ) times/season	( ) litter/times	( ) time/season ( ) Litter/time
Season4					
1. Early Wet		Canal water	( ) hours/day/pump ( ) times/season	( ) litter/times	( ) time/season ( ) Litter/time
2. Wet					
3. Early Dry		Pond water	( ) hours/day/pump ( ) times/season	( ) litter/times	( ) time/season ( ) Litter/time
4. Dry					
5. Permanent		Groundwater	( ) hours/day/pump ( ) times/season	( ) litter/times	( ) time/season ( ) Litter/time

8. Income and Production Cost (Latest)

Season 1 (1. Early Wet / 2. Wet / 3. Early Dry / 4.Dry / 5. Permanent)

1. Crop			1st Crop	2nd Crop	3rd Crop	4th Crop
1a. Crop Name						
1b. Variety Name						
1c. Planting month						
1d. Harvesting month						
2. Cultivated Area	2a. m x m (m^2)					
	2b. ha					
3. Total Production (kg)	3a. Main product					
	3b. By-product					
4. Average selling price (Riel/kg)	4a. Main product					
	4b. By-product					
5. Total Income (Riel)		(3 x 4)				
6. Cost of Production (Total Riel)						
6a. Land preparation (tractor)						
6b. Seeds/seedlings						
6c. Fertilizers						
6d. Pesticides						
6e. Hired Labor						
6f. Irrigation (pump operation)						
6g. Others						
7. Net Income (Riel)		(5 - 6)				

Season 2 (1. Early Wet / 2. Wet / 3. Early Dry / 4.Dry / 5. Permanent)

1. Crop			1st Crop	2nd Crop	3rd Crop	4th Crop
1a. Crop Name						
1b. Variety Name						
1c. Planting month						
1d. Harvesting month						
2. Cultivated Area	2a. m x m (m^2)					
	2b. ha					
3. Total Production (kg)	3a. Main product					
	3b. By-product					
4. Average selling price (Riel/kg)	4a. Main product					
	4b. By-product					
5. Total Income (Riel)		(3 x 4)				
6. Cost of Production (Total Riel)						
6a. Land preparation (tractor)						
6b. Seeds/seedlings						
6c. Fertilizers						
6d. Pesticides						
6e. Hired Labor						
6f. Irrigation (pump operation)						
6g. Others						
7. Net Income (Riel)		(5 - 6)				

Evaluation Survey Format (For farmer who did not fill baseline survey format)

Season 3 (1. Early Wet / 2. Wet / 3. Early Dry / 4.Dry / 5. Permanent)

1. Crop			1st Crop	2nd Crop	3rd Crop	4th Crop
1a. Crop Name						
1b. Variety Name						
1c. Planting month						
1d. Harvesting month						
2. Cultivated Area	2a. m x m (m^2)					
	2b. ha					
3. Total Production (kg)	3a. Main product					
	3b. By-product					
4. Average selling price (Riel/kg)	4a. Main product					
	4b. By-product					
5. Total Income (Riel)		(3 x 4)				
6. Cost of Production (Total Riel)						
6a. Land preparation (tractor)						
6b. Seeds/seedlings						
6c. Fertilizers						
6d. Pesticides						
6e. Hired Labor						
6f. Irrigation (pump operation)						
6g. Others						
7. Net Income (Riel)		(5 - 6)				

Evaluation Survey Format (For farmer who did not fill baseline survey format)

Season 4 (1. Early Wet / 2. Wet / 3. Early Dry / 4.Dry / 5. Permanent)

1. Crop			1st Crop	2nd Crop	3rd Crop	4th Crop
1a. Crop Name						
1b. Variety Name						
1c. Planting month						
1d. Harvesting month						
2. Cultivated Area	2a. m x m (m^2)					
	2b. ha					
3. Total Production (kg)	3a. Main product					
	3b. By-product					
4. Average selling price (Riel/kg)	4a. Main product					
	4b. By-product					
5. Total Income (Riel)		(3 x 4)				
6. Cost of Production (Total Riel)						
6a. Land preparation (tractor)						
6b. Seeds/seedlings						
6c. Fertilizers						
6d. Pesticides						
6e. Hired Labor						
6f. Irrigation (pump operation)						
6g. Others						
7. Net Income (Riel)		(5 - 6)				

9. How to sell

(1) Crop	(2) Form of produce	(3) Who to sell	(4) Individually/ Collectively	(5) How to get market information

(2) 1: Sack 2: Crate 3: Other (specify)

(3) 1: Middlemen in the village 2: Middlemen outside village 3: Local wholesale market 4: Traders from Vietnam 5: Other (Specify)

(4) 1: Individually 2: Collectively with relatives 3: Collectively with neighbor farmers 4: Collectively as/with FWUC members 5: Collectively (Specify)

(5) 1: Neighbors 2: Middlemen in the village 3: Middlemen outside village 4: Traders from local wholesale market 5: Traders from Vietnam 6: Others (Specify)

10. Income except for Owned Agricultural Products

Type of Business	Number of engaged people in the family	Annual income (Riel)

[Reference]

1. Selling livestock/poultry products	2. Selling Fishes	3. Salary from permanent job	4. Wage from temporary on-farm job
5. Wage from temporary off-farm job	6. Private business (restaurant, transportation, trading, shop, etc)	7. Remittance from family members	8. Selling firewood/charcoal
9. Selling handcraft/ cottage industry products	10. Selling forest vegetable/ crop	11. Others (Specify)	

11. Average Monthly Household Expenditure

Item		Amount (Riel/month)	Amount (Riel/year)
Expenditure	Food & Beverages	Riel/month	Riel/year
	Clothing	Riel/month	Riel/year
	Education	Riel/month	Riel/year
	Electricity	Riel/month	Riel/year
	Drinking Water & Clean Water	Riel/month	Riel/year
	Wastewater (Sewage) Treatment	Riel/month	Riel/year
	Medical Care & Medicines	Riel/month	Riel/year
	Others	Riel/month	Riel/year
	Total Expenditure	Riel/month	Riel/year

I-2. Field Survey Results: Khpob Trobek & Tumnup Lok

Irrigation Scheme:	KhpobTrobek & Tumnup Lok Irrigation Scheme
Province (District):	Takeo (Tram Kak)
Period:	April 2024
No. of Sample:	45 samples

1. Interviewee

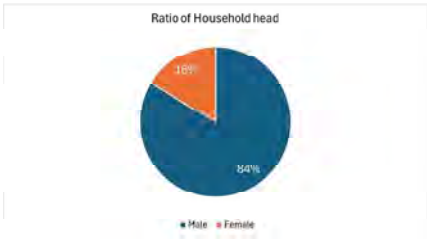
45 farmers were interviewed at the Khpop Trobek and Tumnup Lok Irrigation Scheme. 2% were members of FWUC, and 4 % were members of Agricultural Cooperatives.

2. Family Members

The average number of family members per household was 4.1 (Max: 7, Min: 2), and the average age was 35.9 (Max: 82, Min: 0.9).

	Ave.	Max	Min
No. of family members	4.1	7.0	2.0
Age	35.9	82.0	0.9

Out of 183 people, 51 % (93) are full-time farmers, 26 % (48) are part-time farmers, and 23 % (42) are non-farmers, including housewives, students, office workers, etc. The gender ratio was 50 % male and 50 % female. The ratio of household heads was 84 % male and 16 % female.



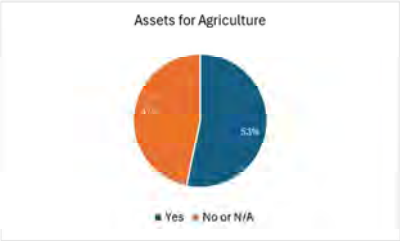
3. Farming Information

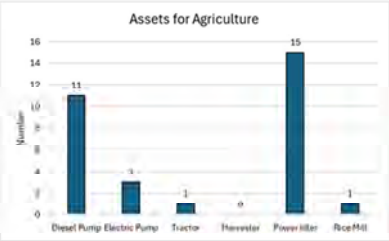
2 % of farmers have both their own fields and rent fields. 98 % of farmers have their own fields only. The total field size per household was 1.3 ha (Max:8 ha, Min:0.2 ha) on average, and the average own field size was 1.1 ha (Max: 7 ha, Min: 0.2 ha), the rental field size was 5.0 ha (n=1, Max: 5 ha, Min: 5.0 ha).

	Ave.	Max	Min
Total field size (ha)	1.3	8.0	0.2
Own field size (ha)	1.1	7.0	0.2
Field size leased from others (ha)	5.0	5.0	5.0
Leased fee/season (Riel)	N/A	N/A	N/A
Leased fee/season/ha (Riel)	N/A	N/A	N/A
Field size leased to others (ha)	N/A	N/A	N/A
Rental revenue/season (Riel)	N/A	N/A	N/A
Rental revenue/season/ha (Riel)	N/A	N/A	N/A

4. Assets for Agriculture

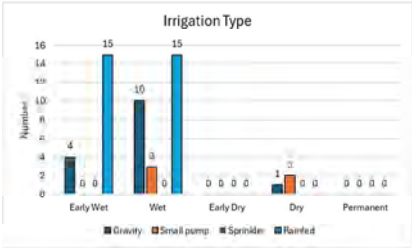
53 % of the farmers answered they have agricultural assets such as diesel pumps, electric pumps, tractors, etc. The right figure lists the number of each agricultural asset for 45 households.



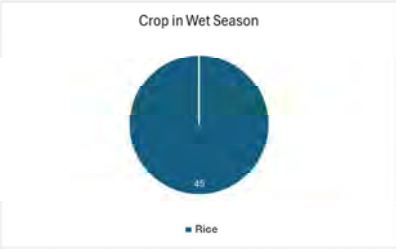


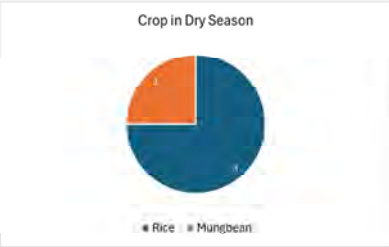
5. Production Trend

Most farmers depend on rainfall, and some farmers apply gravity or small-pump irrigation.

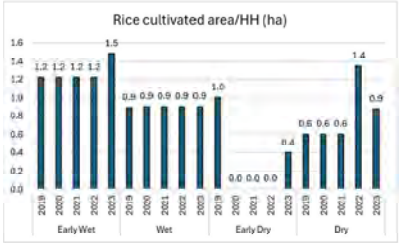


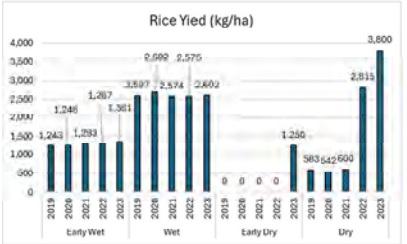
45 farmers planted rice in the wet season. 3 farmers planted rice, and 1 farmer planted mungbean in the dry season (in 2023).



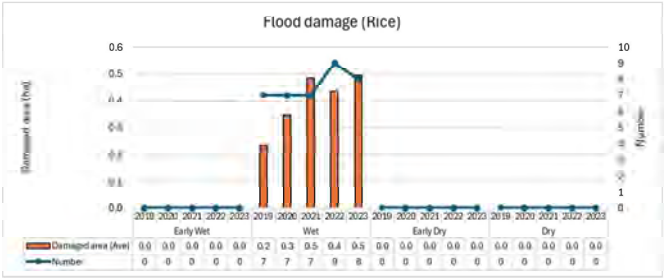


The average rice cultivated area per household (HH) for 5 years was 1.1 ha in the wet season and 0.8 ha in the dry season. Rice yield(kg/ha) in the dry season was not much higher than rice yield in the wet season, unlike in other irrigation areas.

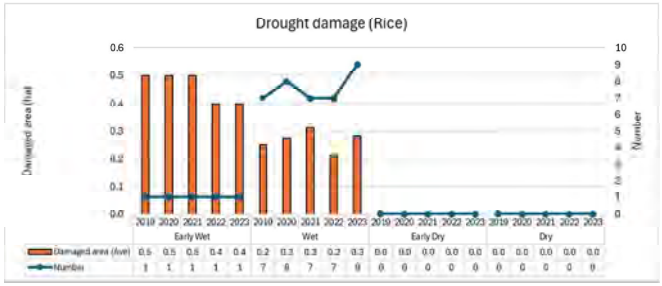




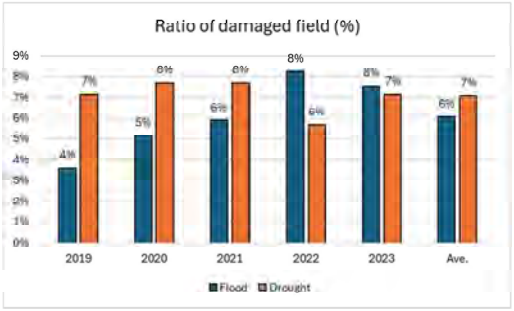
Flood damage occurred in the wet season. On the 5-year average, approximately 17 % of households experienced flood damage in the wet season. The average damaged field size per household was 0.4 ha in the wet season (The undamaged field is not included on average).



Drought damage occurred in the early wet or wet season. On the 5-year average, approximately 17 % of households experienced flood damage in the wet season. The average damaged field size per household was 0.3 ha in the wet season (The undamaged field is not included on average).

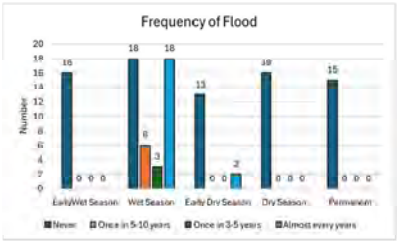


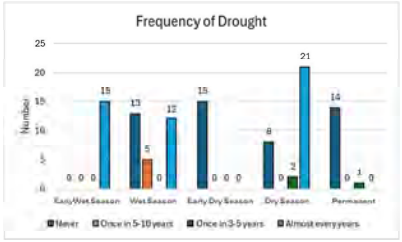
For 45 households on the 5-year average, the ratio of damaged fields by flood and drought was 6 % and 7 %, respectively. (On a land-use basis). *However, after conducting interviews at the PDA office in Takeo, it was determined that damage due to the flood was reasonable at 30% based on land area.



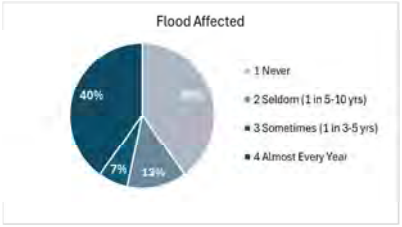
6. Water Disaster

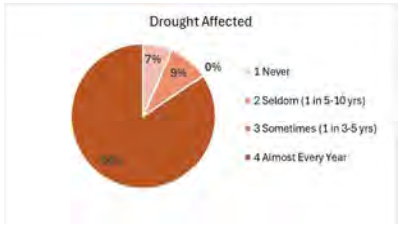
40 % (18) of farmers experience flooding in the wet season almost every year. 33 % (15) and 26 % (12) of farmers experience drought almost every year in the early wet and wet seasons, respectively.





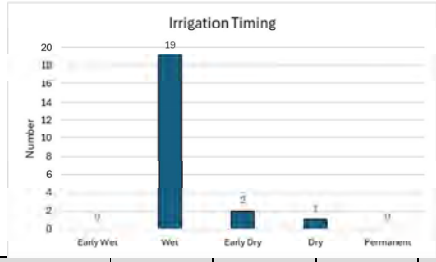
40 % of farmers experience floods almost every year, and 84 % of farmers experience drought almost every year (On the affected level).





7. Irrigation Timing and Cost

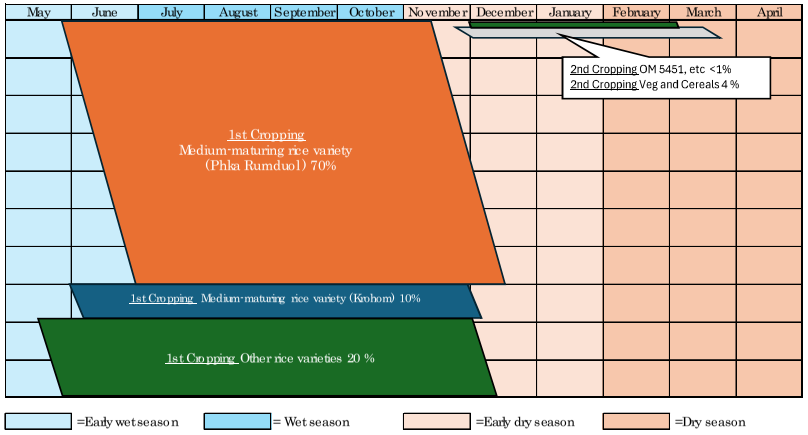
Most farmers interviewed answered that they use only canal water and don't use pond water or groundwater. 42% (19) of farmers irrigate the field in the wet season. Information on irrigation area and fuel and lubricant costs is listed in the table below.

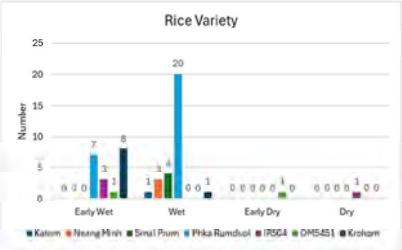


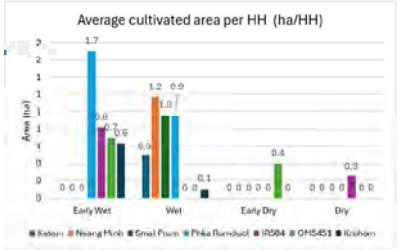
	Early Wet	Wet	Early Dry	Dry	Permanent
Irrigation Area (ha/HH)	0.0	1.0	0.7	0.25	0.0
Pump Operation per season (h)	0.0	14.3	102.4	N/A	0.0
Lubricant Use (time/season)	0.0	1.0	0.0	0.0	0.0
Fuel and Lubricant cost/season (Riel)	0.0	67,100	918,225	58,300	0.0
Fuel and Lubricant cost/season/ha (Riel)	0.0	66,545	1,311,750	233,200	0.0

8. Cropping and Income

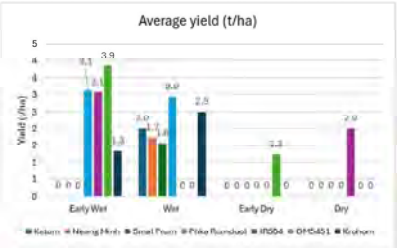
On a land-use basis, Phka Romduol is planted on 70 % of the targeted irrigation scheme in the wet season. An early-maturing variety, OM 5451, and a few vegetables are planted in the dry season. The annual crop intensity was 105 %.



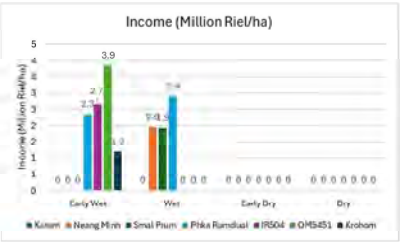


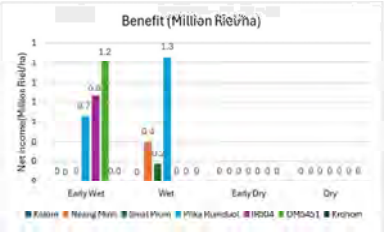


Unlike the other three irrigation schemes, OM 5451 did not show the highest yields in the dry season. This is probably because of the damage of the water shortage. However, OM 5451 showed the highest yield among all rice varieties in the early wet season. The selling price of each variety in the irrigation scheme is listed in the right figure.



Income was highest in OM 5451, but production cost was also highest. Phka Rumduol showed the highest benefit.





The average total income was 4,019,000 Riel/year/HH, the average total cost was 2,632,783 Riel/year/HH, and the total benefit was 1,386,217 Riel/year/HH (On normal conditions).

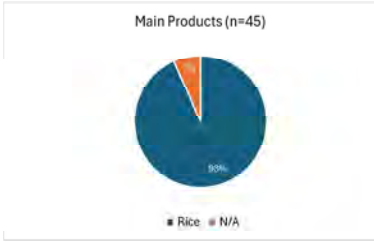
Normal Condition	Riel/year/HH
Average Total Income	4,019,000
Average Total Cost	2,632,783
Average Total Benefit	1,386,217

The average total income was 512,500 Riel/year/HH, the average total cost was 1,072,000 Riel/year/HH, and the total benefit was -559,500 Riel/year/HH (On flood/drought damage conditions).

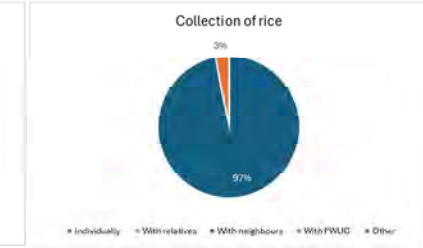
Flood/Drought Damage Condition	Riel/year/HH
Average Total Income	512,500
Average Total Cost	1,072,000
Average Total Benefit	-559,500

9. Market Information

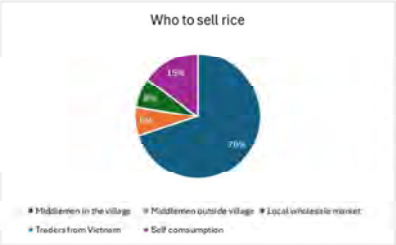
93 % of farmers sell rice as their main product.

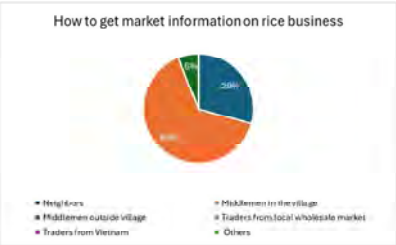


All farmers sell rice in sacks (rice bags), and 97 % collect it individually.



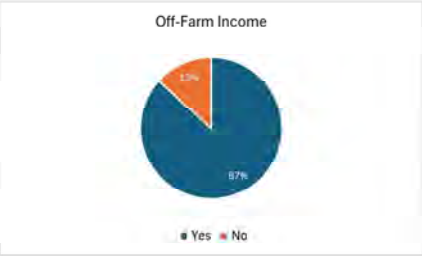
70 % of rice farmers sell rice to middlemen in the village, and 65% also get market information from them.

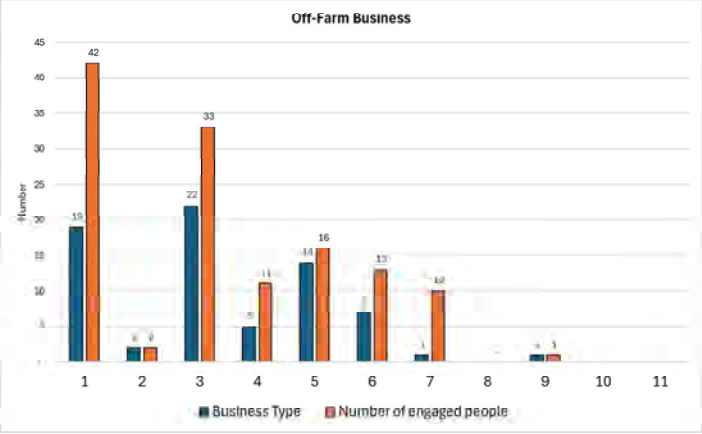




10. Income except for farming business

87 % of farmers have income except for farming business. The average off-farm income per household was 17,059,600 Riel (Max: 52,000,000 Riel, Min: 1,512,000 Riel). The business type and number of engaged people are listed in the figure below.





1. Selling livestock/poultry products	2. Selling Fishes	3. Salary from permanent job	4. Wage from temporary on-farm job
5. Wage from temporary off-farm job	6. Private business (restaurant, transportation, trading, shop, etc)	7. Remittance from family members	8. Selling firewood/charcoal
9. Selling handcraft/ cottage industry products	10. Selling forest vegetable/ crop	11. Others (Specify)	

	Ave.	Max	Min
Off-farm annual income per HH (Riel)	17,059,600	52,000,000	1,512,000

11. Average Annual Household Expenditure

Annual household expenditure on average was 12,119,956 Riel (Max: 30,570,000, Min: 1,590,000).

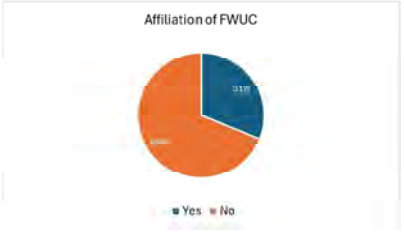
	Ave.	Max	Min
Annual Expenditure per HH (Riel)	12,119,956	30,570,000	1,590,000

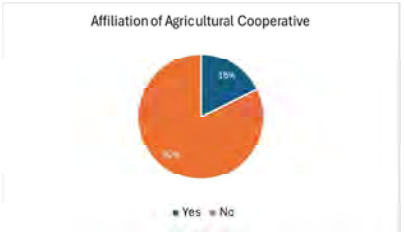
I-3. Field Survey Results: Spean Sraeng

Irrigation Scheme:	Spean Sraeng Irrigation Scheme
Province (District):	Banteay Meanchey (Phnom Srok) and SiemReap (Krolanh)
Period:	April 2024
No. of Sample:	45 samples

1. Interviewee

45 farmers were interviewed at the Spean Sraeng Irrigation Scheme. 31% were members of FWUC, and 18 % were members of Agricultural Cooperatives.



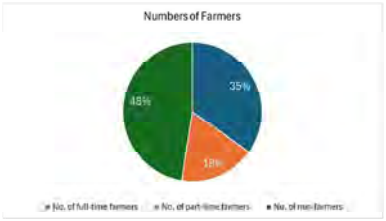


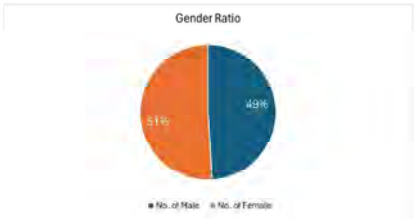
2. Family Members

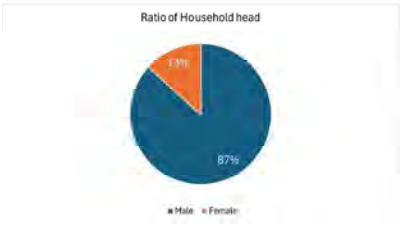
The number of average family members per household was 5.8 (Max: 11, Min: 3), and the average age was 33.3 years old (Max: 88, Min: 0.8).

	Ave	Max	Min
No. of family members	5.8	11	3
Age	33.3	88	0.8

Out of 261 people, 35 % (91) are full-time farmers,18 % (46) are part-time farmers, and 48 % (124) are non-farmers, including housewives, students, office workers, etc. The gender ratio was 49 % male and 51 % female. The ratio of household heads was 87 % male and 13 % female.

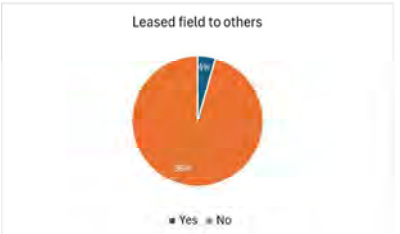






3. Farming Information

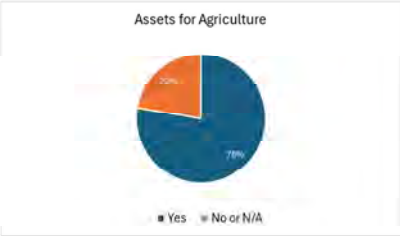
34 % of farmers have both their own fields and rent fields. 61 % of farmers have their own fields only, while only 5 % have rental fields. The total field size per household was 3.7 ha on average (Max:11 ha, Min:0.5 ha). The sample with 45 ha/HH was not included in the average since its values were significantly larger than the other samples. The average own field size was 2.6 ha (Max: 10 ha, Min: 0.3 ha), and the average rental field size was 3.2 ha (Max: 10 ha, Min: 0.7 ha).

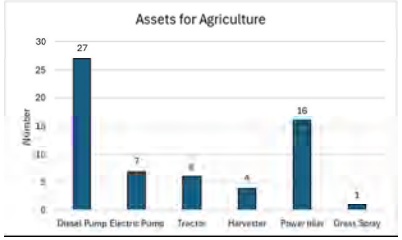


	Ave.	Max	Min
Total field size (ha)	3.7	11.0	0.5
Own field size (ha)	2.6	10.0	0.3
Field size leased from others (ha)	3.2	10.0	0.7
Leased fee/season (Riel)	1,435,714	6,000,000	70,000
Leased fee/season/ha (Riel)	401,905	1,500,000	66,667
Field size leased to others (ha)	2.3	3	2
Rental revenue/season (Riel)	800,000	1,200,000	400,000
Rental revenue/season/ha (Riel)	342,857	400,000	200,000

4. Assets for Agriculture

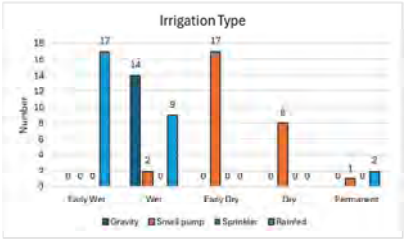
78 % of the farmers answered they have agricultural assets such as diesel pumps, electric pumps, tractors, etc. The right figure lists the number of each agricultural asset for 45 households.



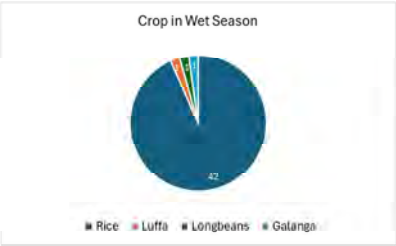


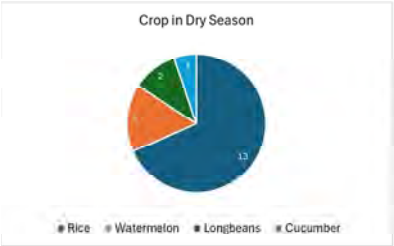
5. Production Trend

Farmers mostly apply gravity or small pump irrigation. Gravity irrigation is mainly used in the wet season, and small pump irrigation is mainly used in the early dry and dry seasons.

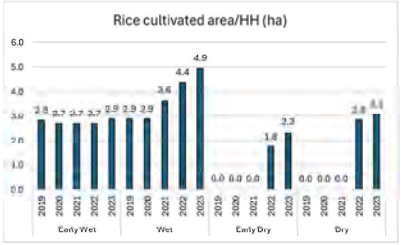


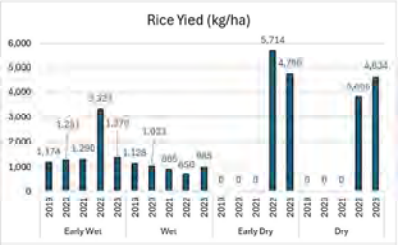
Rice (42), luffa (1), long beans (1), and galanga (1) were planted in the wet season in 2023. Rice (13), watermelon (3), long beans (2), and cucumber (1) were planted in the dry season. In addition, bananas (1) and cassava (1) were planted as year-round crops.



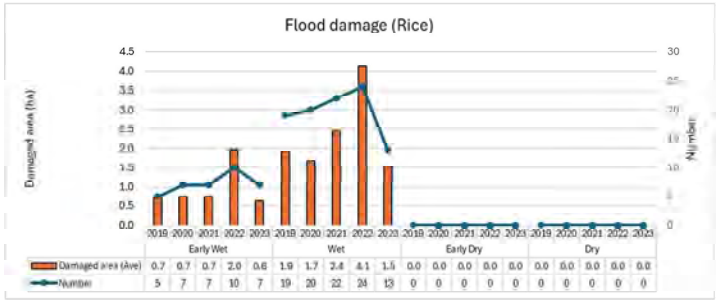


The average rice cultivation area per household (HH) for 5 years was 3.2 ha in wet and 2.5 ha in dry seasons. Rice yield (kg/ha) in the dry season was significantly higher than in the wet season. This is because the yielding variety OM 5451 was cultivated in the dry season (Refer to section 8).

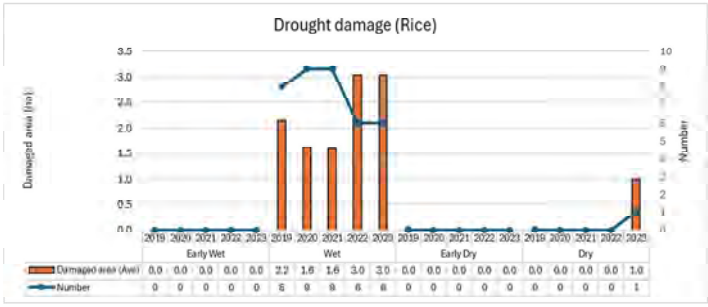




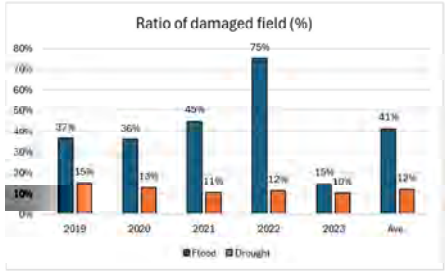
Flood damage occurred mainly in the wet season. On the 5-year average, approximately 60 % of households experienced flood damage in the early wet or wet season. The average damaged field size per household was 1.0 ha in the early wet season and 2.3 ha in the wet season (The undamaged field is not included on average).



Drought damage occurred in the wet season. On the 5-year average, approximately 17 % of households experienced flood damage in the wet season. The average damaged field size per household was 2.3 ha in the wet season (The undamaged field is not included on average).

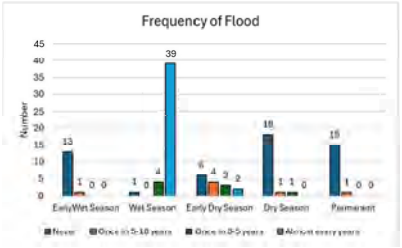


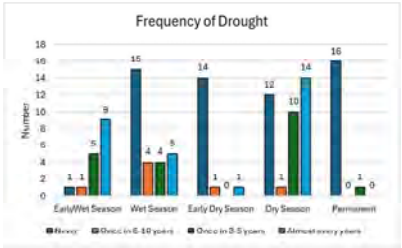
For 45 households on the 5-year average, the ratio of damaged fields by flood and drought was 41 % and 12 %, respectively (On land-use basis).



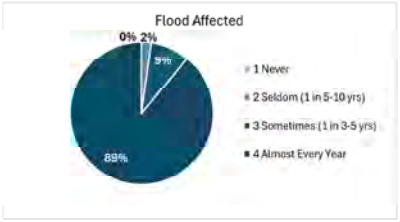
6. Water Disaster

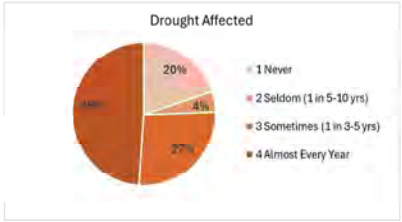
86 % (39) of farmers experience flooding in the wet season almost every year. 9 farmers answered that they experience drought once in 3-5 years in a specific season or throughout the year.





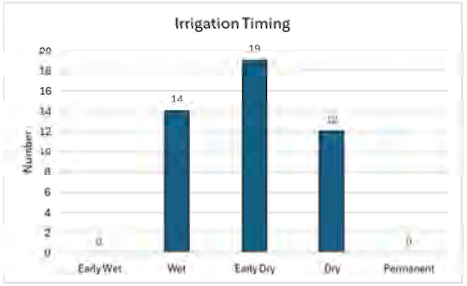
89 % of farmers experience flooding almost every year, and 49 % of farmers experience drought almost every year (On the affected level).





7. Irrigation Timing and Cost

The farmers interviewed answered that they use only canal water and don't use pond water or groundwater. Over one-third of farmers use canal water to irrigate the fields. The table below lists information on irrigation area and fuel and lubricant costs.

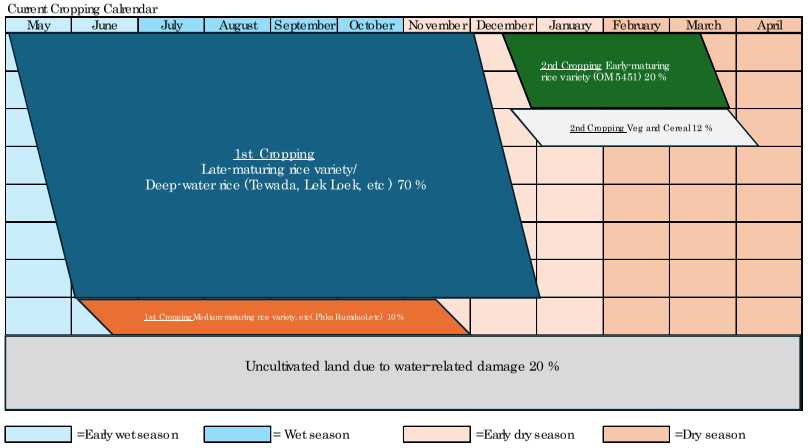


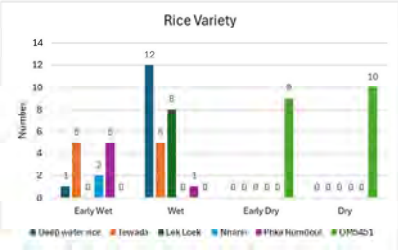
	Early Wet	Wet	Early Dry	Dry	Permanent
Irrigation Area (ha/HH)	0.0	2.4	3.1	3.1	0.0
Pump Operation per season (h/season)	0.0	36.3	354.1	279.4	0.0
Lubricant Use (time/season)	0.0	0.0	2.1	1.0	0.0
Fuel and Lubricant cost/season (Riel)	0.0	119,901	1,806,467	701,052	0.0
Fuel and Lubricant cost/season/ha (Riel)	0.0	49,517	580,956	222,949	0.0

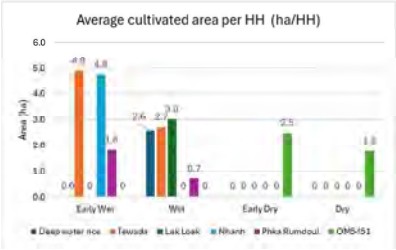
8. Cropping and Income

On a land-use basis, deep-water rice (Tewada and Lek look) is planted in 70 % of the targeted irrigation scheme in the wet season, and OM 5451 is planted in 20 % of the targeted irrigation scheme in the dry season. 20 % of land is not used due to water-related damage. Some vegetables and cereals are also cultivated, mainly in the dry season. The annual cropping intensity was 112 %.

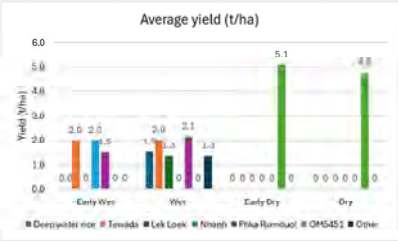
Current Cropping Calendar



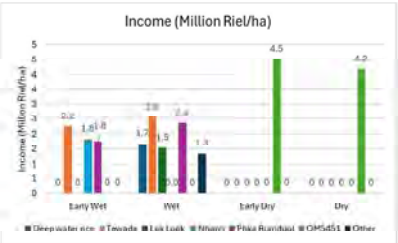


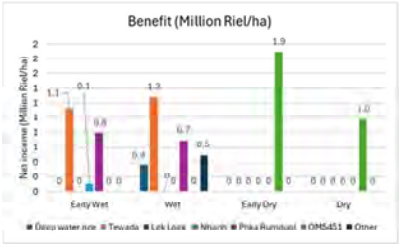


OM 5451 showed the highest yield among all rice varieties. The selling price of each variety at the targeted irrigation is listed in the right figure.



Income was highest in OM 5451, but production cost was also highest due to higher pump irrigation cost. However, the benefit was still highest in OM 5451. * The samples with significantly low yields, resulting in a deficit in benefit, are not included in the data.





The average total income was 11,570,895 Riel/year/HH, the average total cost was 7,063,204 Riel/year/HH, and the total benefit was 4,507,691 Riel/year/HH (On normal conditions).

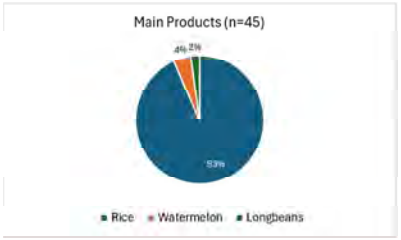
Normal Condition	Riel/year/HH
Average Total Income	11,570,895
Average Total Cost	7,063,204
Average Total Benefit	4,507,691

The average total income was 5,800,000 Riel/year/HH, the average total cost was 6,114,600 Riel/year/HH, and the total benefit was -314,600 Riel/year/HH (On flood/drought damage conditions).

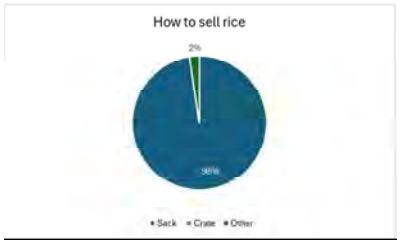
Flood/Drought Damage Condition	Riel/year/HH
Average Total Income	5,800,000
Average Total Cost	6,114,600
Average Total Benefit	-314,600

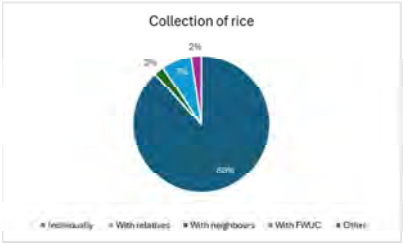
9. Market Information

93 % of farmers sell rice as their main product.

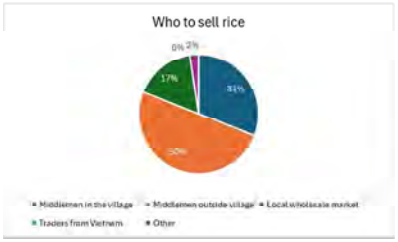


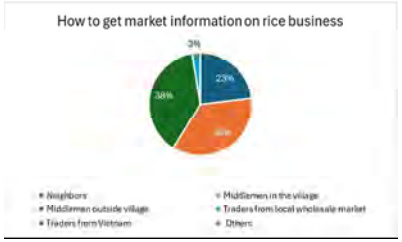
Most farmers sell rice in sacks and collect it individually.





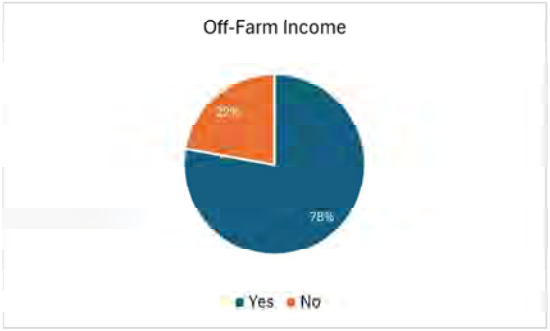
50 % of rice farmers sell rice to middlemen outside the village, and 36 % of rice farmers also get market information from them.

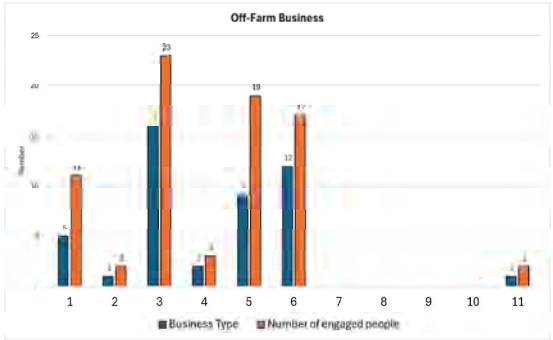




10. Income except for farming business

78 % of farmers have income except for farming businesses. The business type and number of engaged people are listed in the figure below. The average off-farm income per household was 10,716,444 Riel.





1. Selling livestock/poultry products	2. Selling Fishes	3. Salary from a permanent job	4. Wage from temporary on-farm job
5. Wage from temporary off-farm job	6. Private business (restaurant, transportation, trading, shop, etc)	7. Remittance from family members	8. Selling firewood/charcoal
9. Selling handcraft/ cottage industry products	10. Selling forest vegetable/ crop	11. Others (Specify)	

	Ave.	Max	Min
Off-farm annual income per HH (Riel)	10,716,444	104,400,000	200,000

11. Average Annual Household Expenditure

Annual household expenditure on average was 16,145,844 Riel.

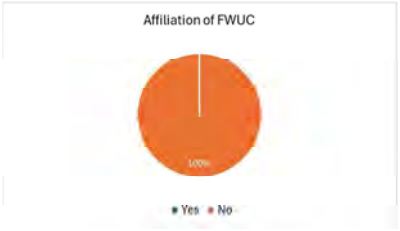
	Ave.	Max	Min
Annual Expenditure per HH (Riel)	16,145,844	43,600,000	8,100,000

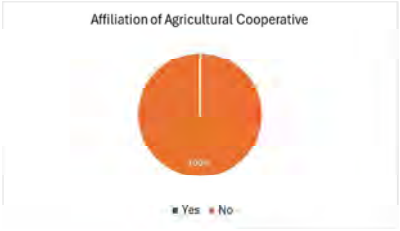
I-4. Field Survey Results: Plaing

Irrigation Scheme:	Plaing Irrigation Scheme
Province (District):	SiemReap (Pouk and Krolanh)
Period:	April 2024
No. of Sample:	45 samples

1. Interviewee

45 farmers were interviewed at the Plaing Irrigation Scheme. None of the interviewees were members of FWUC or Agricultural Cooperatives.



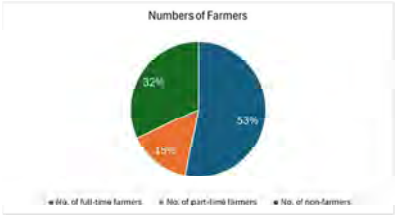


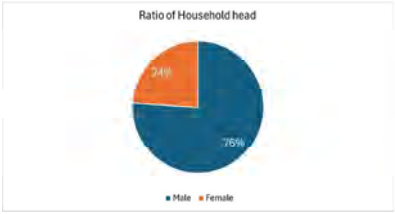
2. Family Members

The number of average family members per household was 4.4 people (Max: 9, Min: 1), and the average age was 36.9 years old (Max: 81, Min: 0.4).

	Ave.	Max	Min
No. of family members	4.4	9.0	1.0
Age	36.9	81	0.4

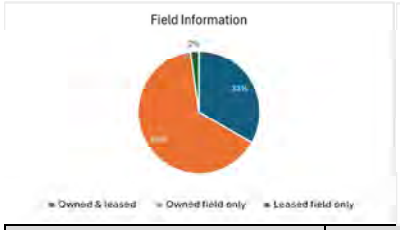
Out of 200 people, 53 % (106) are full-time farmers, 15 % (30) are part-time farmers, and 32 % (64) are non-farmers, including housewives, office workers, students, etc. The gender ratio was 49 % male and 51 % female. The ratio of household heads was 76 % male and 24 % female.

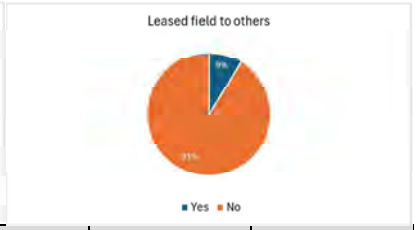




3. Farming Information

33 % of farmers have both their own fields and rent fields. 64 % of farmers have their own fields only, while only 2 % have rental fields. The total field size per household was 2.7 ha on average (Max:10 ha, Min:0.5 ha), and the average own field size was 2.1 ha (Max: 9 ha, Min: 0.4 ha), the rental field size was 1.8 ha (Max: 7 ha, Min: 0.7 ha).

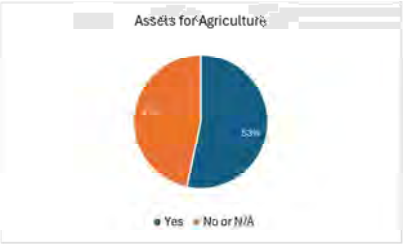


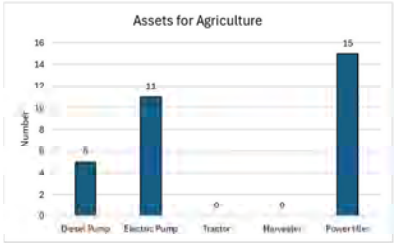


	Ave.	Max	Min
Total field size (ha)	2.7	10.0	0.5
Own field size (ha)	2.1	9.0	0.4
Field size leased from others (ha)	1.8	7.0	0.7
Leased fee/season (Riel)	439,000	900,000	120,000
Leased fee/season/ha (Riel)	329,600	600,000	120,000
Field size leased to others (ha)	2.1	3	1
Rental revenue/season (Riel)	800,000.0	1,200,000	400,000
Rental revenue/season/ha (Riel)	329,600	400,000	133,333

4. Assets for Agriculture

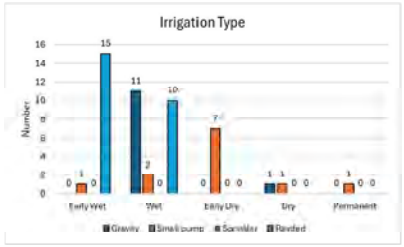
53 % of the farmers answered that they had agricultural assets such as diesel pumps, electric pumps, power tillers, etc. The right figure lists the number of each agricultural asset for 45 households.



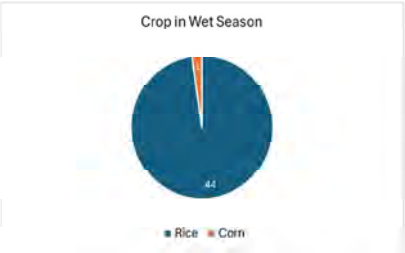


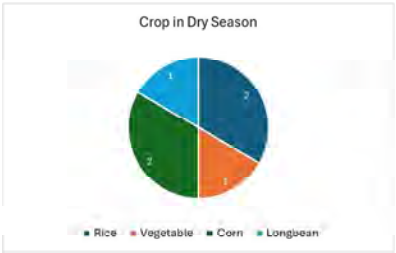
5. Production Trend

Farmers mostly apply gravity or small pump irrigation. Gravity irrigation is mainly applied in the wet season. 7 farmers apply small pump irrigation in the early dry season.

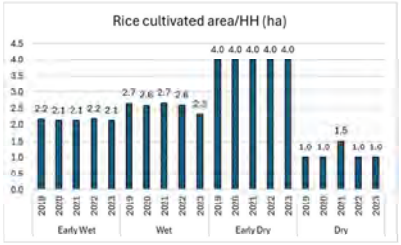


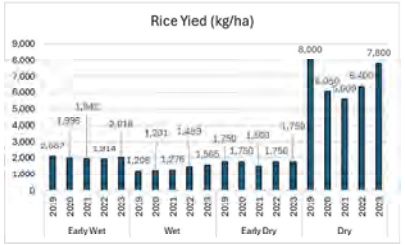
Rice (44) and corn (1) were planted in the wet season in 2023. Rice (2), vegetables (1), corn (2), and long beans (1) were planted in the dry season in 2023.



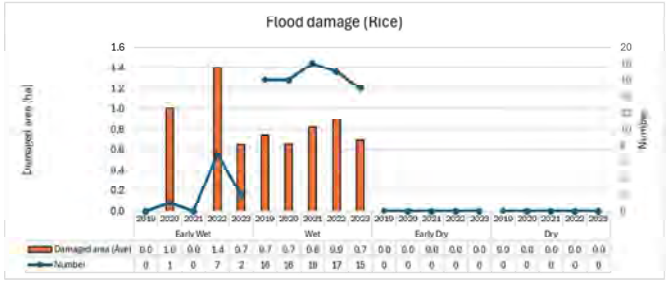


The average rice cultivation area per household (HH) for 5 years was 2.4 t/ha in the wet season and 2.6 t/ha in the dry season. Rice yield (kg/ha) in the dry season was significantly higher than in other seasons. This is mainly because the yielding variety OM 5451 was cultivated in the dry season (Refer to section 8).

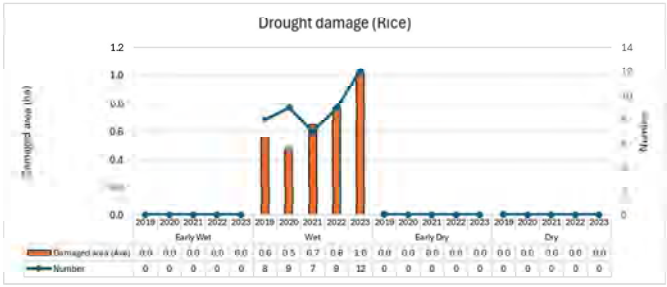




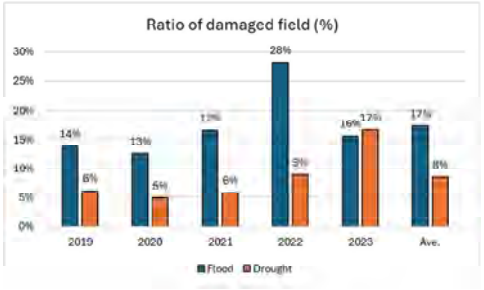
Flood damage occurred mainly in the wet season. On the 5-year average, approximately 35 % of households experienced flood damage in the wet season. The average damaged field size per household was 0.8 ha in the wet season (The undamaged field is not included on average).



Drought damage occurred in the wet season. On the 5-year average, approximately 20 % of households experienced flood damage in the wet season. The average damaged field size per household was 0.7 ha in the wet season (The undamaged field is not included on average).

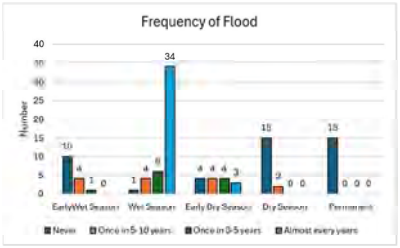


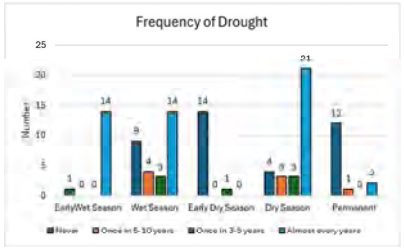
For 45 households on the 5-year average, the ratio of damaged fields by flood and drought was 17 % and 8 %, respectively. (On-land use basis)



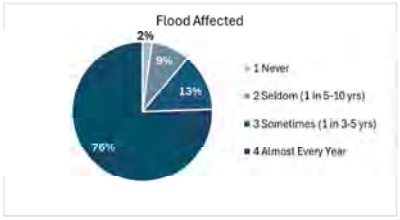
6. Water Disaster

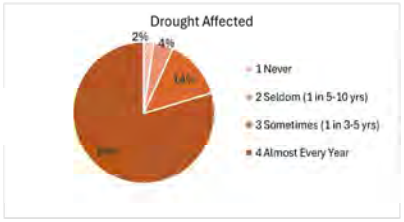
75 % (34) of farmers experience floods in the wet season almost every year. 31 % (14) of farmers answered that they experience drought in the wet season almost every year.





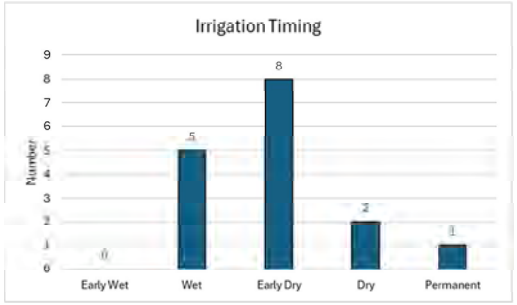
76 % of farmers experience floods almost every year, and 80 % of farmers experience drought almost every year (on the affected level).





7. Irrigation Timing and Cost

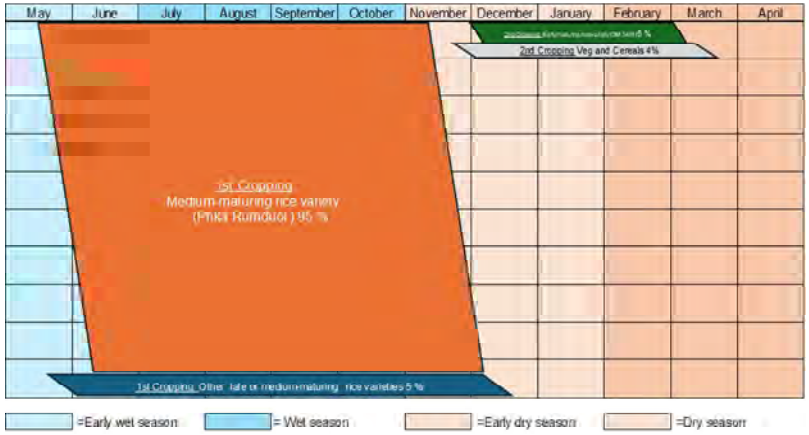
Most farmers interviewed answered that they use only canal water, and just 2 farmers answered that they use pond water. The figure below lists information on irrigation timing, irrigation area, and fuel and lubricant costs.

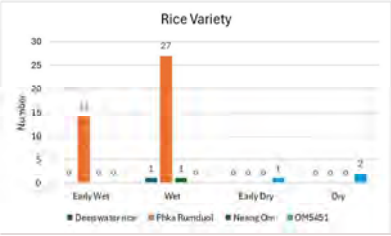


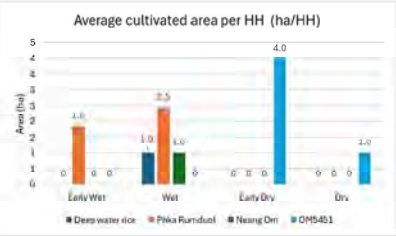
	Early Wet	Wet	Early Dry	Dry	Permanent
Irrigation Area (ha/HH)	0.0	2.7	0.6	1.0	0.01
Pump Operation per season (h)	0.0	N/A	138.6	2.0	N/A
Lubricant Use (time/season)	0.0	0.0	0.0	0.0	N/A
Fuel and Lubricant cost/season (Riel)	0	115,000	566,878	161,000	N/A
Fuel and Lubricant cost/season/ha (Riel)	0	42,593	1,009,219	161,000	N/A

8. Cropping and Income

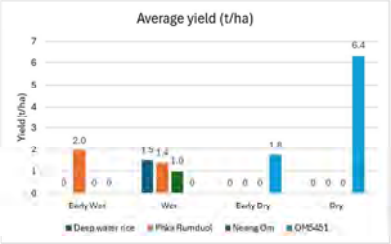
On a land-use basis, Phka Rumdul is planted on 95 % of the targeted irrigation scheme in the wet season, and OM 5451 is planted on 6 % of the targeted irrigation scheme in the dry season. A few vegetables are also cultivated in the dry season. The annual cropping intensity was 110 %.



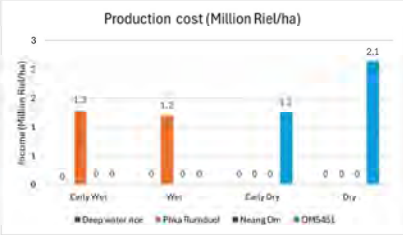


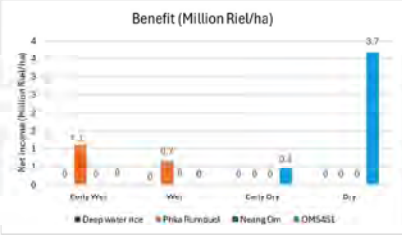


OM 5451 showed the highest yield (6.4 t /ha) in the dry season. The selling price of each variety is listed in the right figure.



Income was highest in OM 5451 in the dry season, but production cost was also highest due to higher pump irrigation costs. However, the benefit was still highest in OM 5451.





The average total income was 6,058,909 Riel/year/HH, the average total cost was 3,880,170 Riel/year/HH, and the total benefit was 2,178,739 Riel/year/HH (On normal conditions).

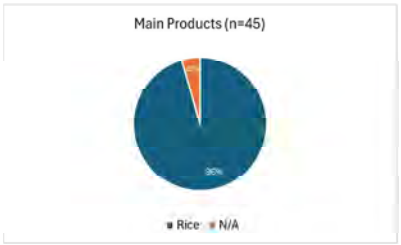
Normal Condition	Riel/year/HH
Average Total Income	6,058,909
Average Total Cost	3,880,170
Average Total Benefit	2,178,739

The average total income was 1,050,714 Riel/year/HH, the average total cost was 1,347,143 Riel/year/HH, and the total benefit was -296,429 Riel/year/HH (On flood/drought damage conditions).

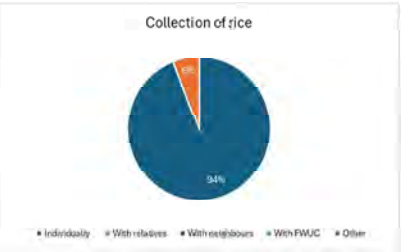
Flood/Drought Damage Condition	Riel/year/HH
Average Total Income	1,050,714
Average Total Cost	1,347,143
Average Total Benefit	-296,429

9. Market Information

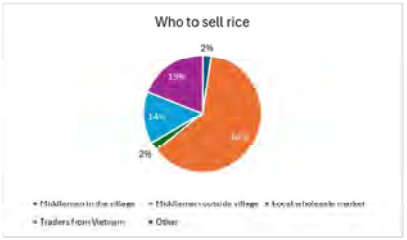
96 % of farmers sell rice as their main product.

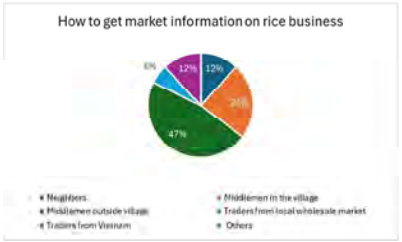


All farmers sell rice in sacks (rice bags), and most of them collect it individually.



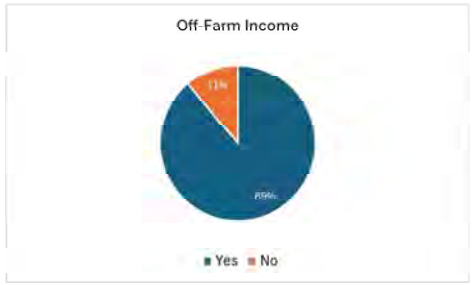
62 % of rice farmers sell rice to middlemen in the village, and 24% also get market information from them.

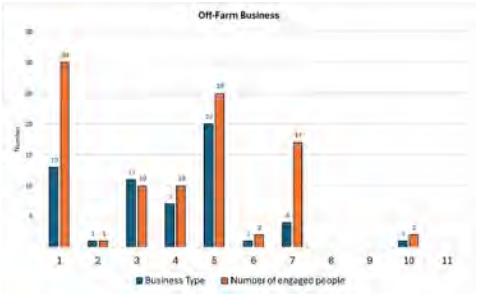




10. Off-farm income

89 % of farmers have income except for farming business. The business type and number of engaged people out of 45 households are listed in the figure below. The average net income per household was 6,603,333 Riel.





1. Selling livestock/poultry products	2. Selling Fishes	3. Salary from a permanent job	4. Wage from temporary on-farm job
5. Wage from temporary off-farm job	6. Private business (restaurant, transportation, trading, shop, etc)	7. Remittance from family members	8. Selling firewood/charcoal
9. Selling handcraft/ cottage industry products	10. Selling forest vegetable/ crop	11. Others (Specify)	

	Ave.	Max	Min
Off-farm annual income per HH (Riel)	6,603,333	20,000,000	300,000

11. Average Annual Household Expenditure

Annual household expenditure on average was 10,439,200 Riel (Max: 42,760,000, Min: 1,610,000).

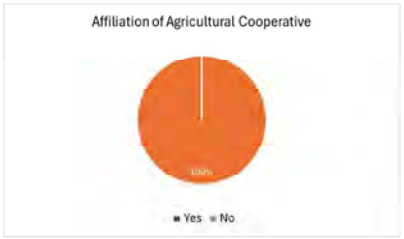
	Ave.	Max	Min
Annual Expenditure per HH (Riel)	10,439,200	42,760,000	1,610,000

I-5. Field Survey Results: Khpob Krous

Irrigation Scheme:	Khpob Krous Irrigation Scheme
Province (District):	Kampong Speu (Borseth)
Period:	April 2024
No. of Sample:	45 samples

1. Interviewee

45 farmers were interviewed at the Khpob Krous Irrigation Scheme. There was no member of FWUC or Agricultural Cooperatives.

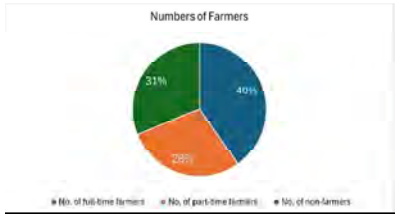


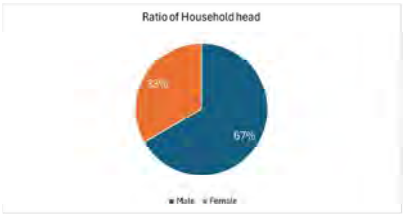
2. Family Members

The number of average family members per household was 4.1 people (Max: 9, Min: 1), and the average age was 32.8 years old (Max: 85, Min: 0.8).

	Ave.	Max	Min
No. of family members	4.1	9	1
Age	32.8	85	0.8

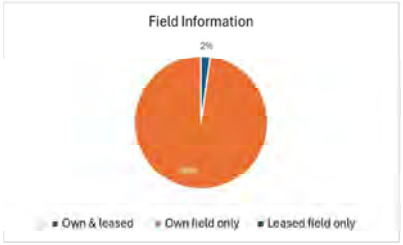
Out of 186 people, 40 % (75) are full-time farmers, 28 % (53) are part-time farmers, and 31 % (58) are non-farmers, including housewives, students, office workers, etc. The gender ratio was 44 % male and 56 % female. The ratio of household heads was 67 % male and 33 % female.

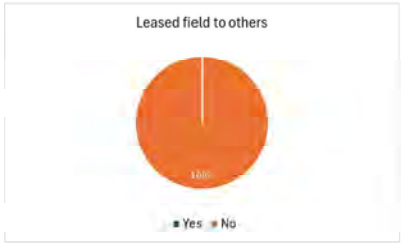




3. Farming Information

2 % of farmers have both their own fields and rent fields. 98 % of farmers have their own fields only. The total field size per household was 0.6 ha on average (Max:2.0 ha, Min:0.2 ha), and the average own field size was 0.6 ha (Max: 2.0 ha, Min: 0.2 ha), the rental field size was 0.1 ha (n=1, Max: 0.1 ha, Min: 0.1 ha).

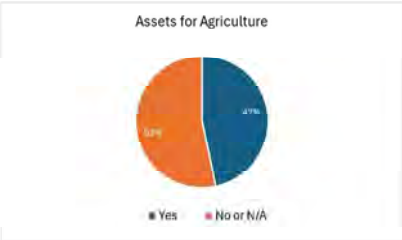


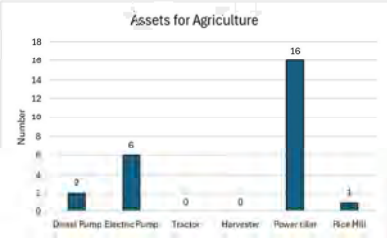


	Ave.	Max	Min
Total field size (ha)	0.6	2.0	0.2
Own field size (ha)	0.6	2.0	0.2
Field size leased from others (ha)	0.1	0.1	0.1
Leased fee/season (Riel)	N/A	N/A	N/A
Leased fee/season/ha (Riel)	N/A	N/A	N/A
Field size leased to others (ha)	0	0	0
Rental revenue/season (Riel)	0	0	0
Rental revenue/season/ha (Riel)	0	0	0

4. Assets for Agriculture

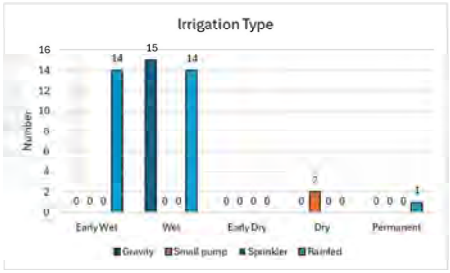
47 % of the farmers answered they have agricultural assets such as diesel pumps, electric pumps, power tillers, etc. The right figure lists the number of each agricultural asset for 45 households.



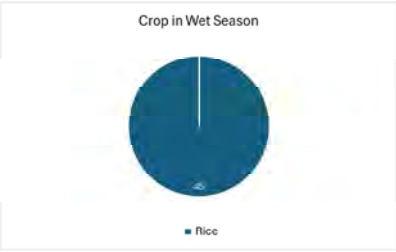


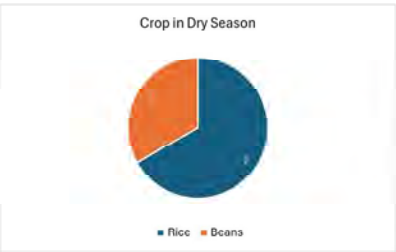
5. Production Trend

Farmers mostly depend on rainfall or apply gravity irrigation in the early wet and wet seasons.

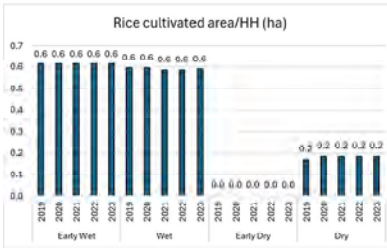


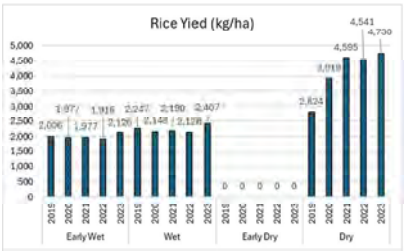
45 farmers planted rice and in the wet season in 2023. Few farmers planted rice and beans in dry season.



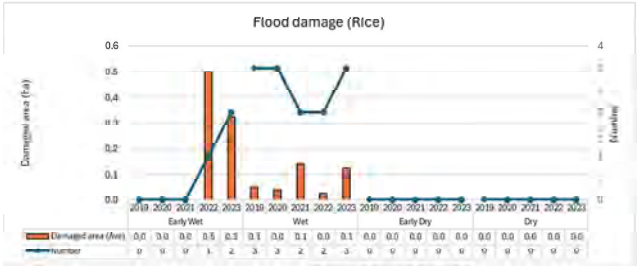


The average rice cultivation area per household (HH) was 0.6 ha in the wet season and 0.2 ha in the dry season. Rice yield (kg/ha) in the dry season was significantly higher than rice yield in the wet season. This is because the yielding variety OM 5451 was cultivated in the dry season (Refer to section 8).

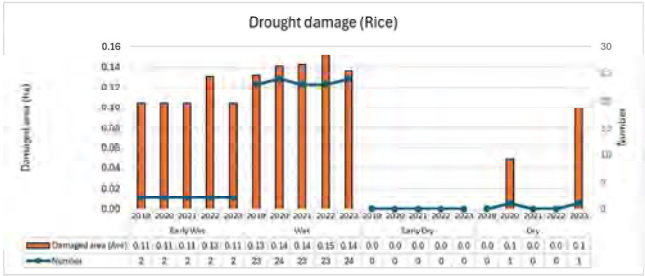




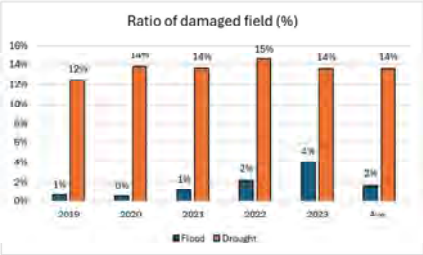
Flood occurred in the early wet or wet season. On the 5-year average, approximately 6 % of households experienced flood damage in the wet season. The average damaged field size per household was 0.4 ha in the wet season (The undamaged field is not included on average).



Drought damage mainly occurred in the wet season. On the 5-year average, approximately 51 % of households experienced drought damage in the wet season. The average damaged field size per household was 0.14 ha in the wet season (The undamaged field is not included on average).

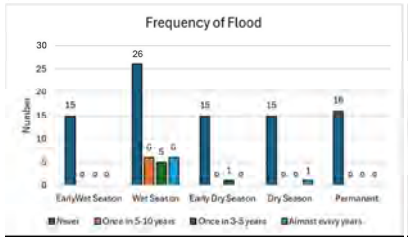


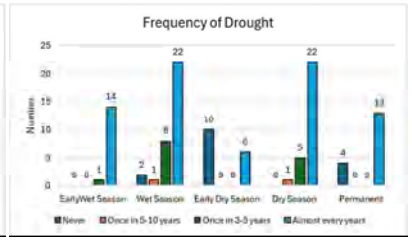
For 45 households on the 5-year average, the ratio of damaged fields by flood and drought was 2 % and 14 %, respectively. (On a land-use basis)



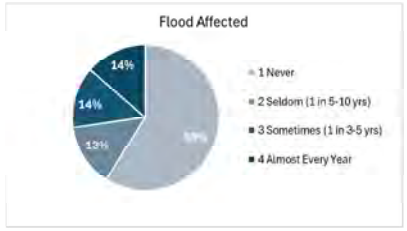
6. Water Disaster

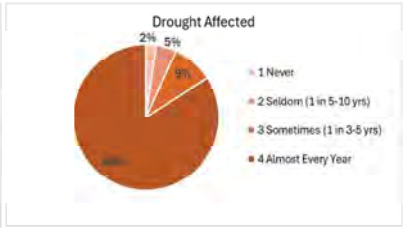
13 % (6) of farmers experience flooding in the wet season almost every year. The frequency of drought was high. 48 % (22) of farmers answered that they experience drought in the wet season almost every year.





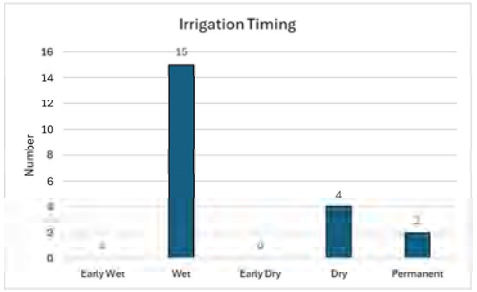
14 % of farmers experience flooding almost every year, and 84 % of farmers experience drought almost every year (On the affected level).





7. Irrigation Timing and the Cost

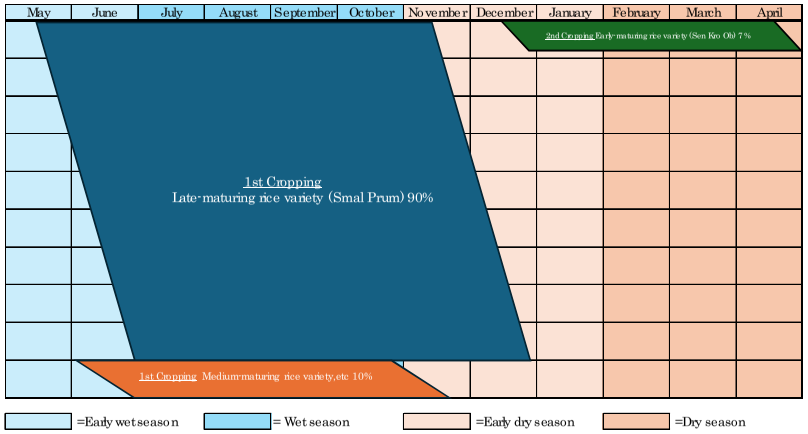
The farmers interviewed answered that they apply only canal water and don't use pond water or groundwater. 33 % (15) of farmers use canal water to irrigate the fields in the wet season. The table below lists information on irrigation area and fuel and lubricant costs.

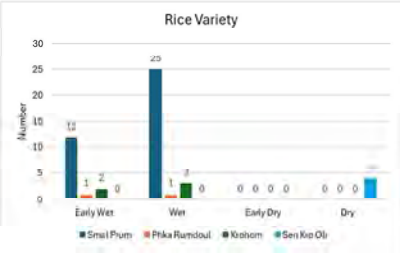


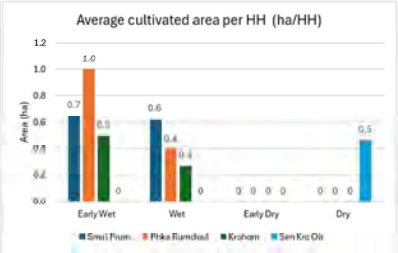
	Early Wet	Wet	Early Dry	Dry	Permanent
Irrigation Area (ha/HH)	0	0.6	0	0.4	0.1
Pump Operation per season (h/season)	0	20.0	0	17.3	N/A
Lubricant Use (time/season)	0	0	0	0	N/A
Fuel and Lubricant cost/season (Riel)	0	30,000	0	79,063	N/A
Fuel and Lubricant cost/season/ha (Riel)	0	54,152	0	201,433	N/A

8. Cropping and Income

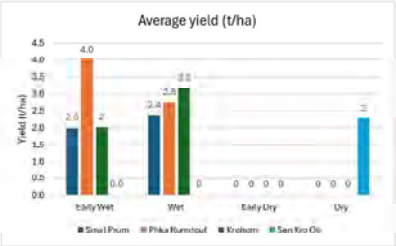
On a land-use basis, Small Prum is planted in 90 % of the targeted irrigation scheme in the wet season, and Sen Kro Ob is planted in 7 % in the dry season. The annual cropping intensity was 107 %.



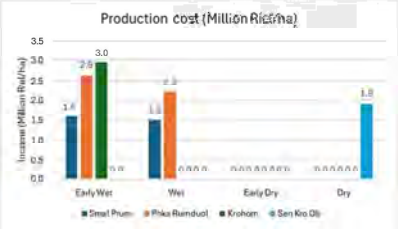


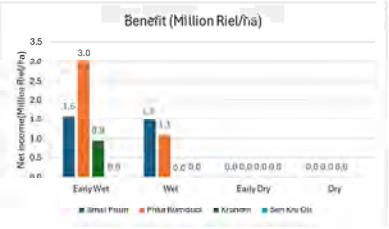


Phka Rumduol showed the highest yield (4.0 t /ha) in the early wet season. The selling price of each variety at the targeted irrigation scheme is listed in the right figure.



In the early wet season, income and net income were highest in Phka Rumduol.





The average total income was 2,339,571 Riel/year/HH, the average total cost was 1,351,966 Riel/year/HH, and the total benefit was 987,605 Riel/year/HH (On normal conditions).

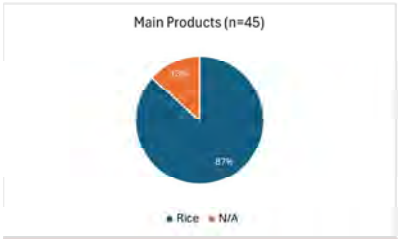
Normal Condition	Riel/year/HH
Average Total Income	2,339,571
Average Total Cost	1,351,966
Average Total Benefit	987,605

The average total income was 1,385,625 Riel/year/HH, the average total cost was 1,394,175 Riel/year/HH, and the total benefit was -8,550 Riel/year/HH (On flood/drought damage conditions).

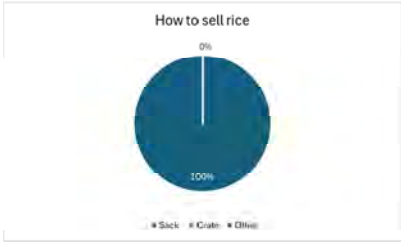
Flood/Drought Damage Condition	Riel/year/HH
Average Total Income	1,385,625
Average Total Cost	1,394,175
Average Total Benefit	-8,550

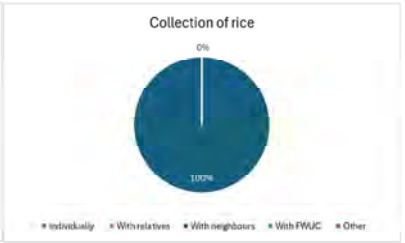
9. Market Information

87 % of farmers sell rice as their main product.

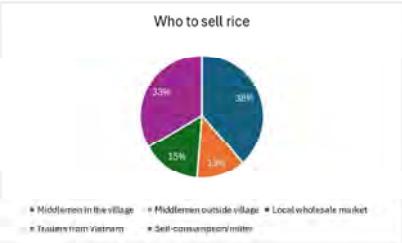


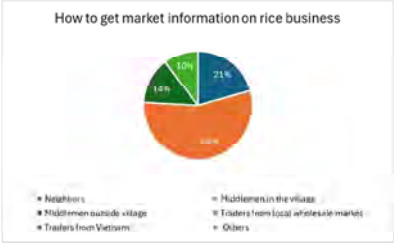
All farmers sell rice in sacks (rice bags) and collect it individually.





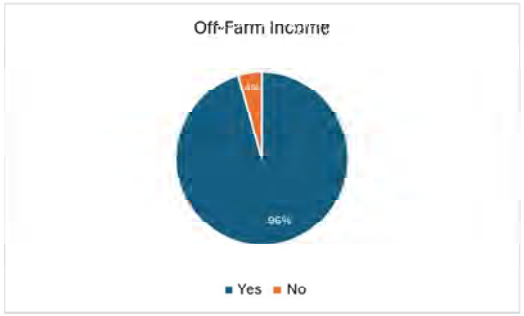
38 % of rice farmers sell rice to middlemen in the village, and 55 % also get market information from them.

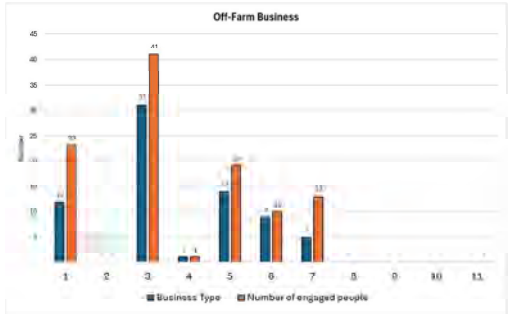




10. Income except for farming business

96 % of farmers have income except for farming businesses. The business type and number of engaged people are listed in the figure below. The average net off-farm income per household was 17,296,760 Riel. (Max: 61,200,360 Riel, Min: 3,840 Riel)





1. Selling livestock/poultry products	2. Selling Fishes	3. Salary from a permanent job	4. Wage from temporary on-farm job
5. Wage from temporary off-farm job	6. Private business (restaurant, transportation, trading, shop, etc)	7. Remittance from family members	8. Selling firewood/charcoal
9. Selling handcraft/ cottage industry products	10. Selling forest vegetable/ crop	11. Others (Specify)	

	Ave.	Max	Min
Off-farm annual income per HH (Riel)	17,296,760	61,200,360	3,840

11. Average Annual Household Expenditure

Annual household expenditure on average was 9,946,200 Riel (Max: 33,710,000 Riel, Min: 925,000 Riel).

	Ave.	Max	Min
Annual Expenditure per HH (Riel)	9,946,200	33,710,000	925,000

Appendix II

Water Resources

Contents

II-1. Rainfall Data

II-1-1. Ground Station Data in 4 Provinces

Takeo Province **Longitude:104° 48' E** **Latitude: 11° 59' N**

Monthly Rainfall in mm

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	30	0	0	117	149	65	196	66	213	277	175	27
1997	0	23	10	92	76	70	187	118	140	234	63	4
1998	0	0	0	73	96	48	138	177	211	192	211	44
1999	31	0	43	170	163	64	52	188	106	500	199	12
2000	21	0	40	87	74	146	82	171	199	410	139	178
2001	18	3	133	102	108	99	156	164	248	447	55	64
2002	0	0	0	35.8	222	113	126	184.5	120.5	138.5	350	261.7
2003	0	0	25.3	51.3	178.5	49	377.8	129.7	121.5	293.6	79.3	24.5
2004	0	0	52.5	35	241.3	138	67.5	112.8	160.4	206.3	133	0
2005	0	0	0	28.5	69.2	93.7	216.5	128.5	211	247	142.6	95.5
2006	0	0	0	164.5	156.5	164	104.2	218	289.5	150.5	14	4.5
2007	0	0	46	38	108	95.5	212	119.5	216	345	137.7	0
2008	21.5	3.5	0	145.5	119	219	70.6	183.6	269.6	208.9	257.6	141
2009	0	8.5	2.3	48.7	155.6	146.7	147.7	178.4	163.6	150	15.5	0
2010	9	0	1.5	55.5	86.5	303.8	139.7	203	172.5	374.5	179.4	44.8
2011	0	0	34.3	19.2	188.9	220.6	192.9	289.9	155.6	233.8	147.5	4
2012	12	19.5	104.1	30.2	151.4	149.7	138.6	140.5	299.8	212.8	109.7	10.5
2013	1.2	0	16.5	86.5	85.7	178.4	206.2	119.4	21	122.3	122.3	21
2014	0	0	6	151.5	212.7	137.3	99.4	38.5	94.2	379.4	0	0
2015	0	0	0	88.2	64	115	67.8	48	234.7	246.5	210	0
2016	0	0	0	2.2	155.3	217.7	132.5	58.8	271.5	305.5	100.5	84.5
2017	47.5	4.5	1.3	106.2	149.5	121.6	147.4	204.5	106.3	315	200	89
2018	91	0	60	17	192	180	162	107.1	316.5	335.5	62	18.4
2019	5.5	0	66.8	66	161.3	126.8	168.4	226	358	165.8	51.4	0
2020	0	0	5.32	22.95	29.72	109.51	142.04	208.87	309.83	250	139.94	37.94
2021	0	5.5	4	104	153	114	156.5	217.82	152	195	145	63.5
2022	30	21.5	83	98.2	213.3	199.3	263.2	254.2	206.6	203.6	91.6	62
2023	67.5	4.1	0	18.5	141.6	196.2	187	106.8	253	282.3	115	3
Ave	13.8	3.3	26.2	73.4	139.3	138.6	154.9	155.8	200.7	265.1	130.2	46.2
Min	0.0	0.0	0.0	2.2	29.7	48.0	52.0	38.5	21.0	122.3	0.0	0.0
Max	91.0	23.0	133.0	170.0	241.3	303.8	377.8	289.9	358.0	500.0	350.0	261.7

Banteay Meanchey Province

Monthly Rainfall in mm

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	-	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	0	5.9	16	67.1	148.7	201.8	171.7	235.3	251.1	113	9.2	10.2
2003	0	7.2	29.2	115.9	140.2	164.2	148.6	161.2	230	148.73	0	0
2004	9.7	5.2	0.5	128.7	109	269.4	172	155.6	160.3	121.5	0	0
2005	0	0	7.5	99.9	155.2	112.8	211.9	94.1	208.3	260.8	0	0
2006	0	0	0	93.8	109.2	39.4	329	171.6	180.8	183.5	0	2
2007	4	29.3	15.7	139.5	206.5	87.4	158.2	104.5	267.7	112.3	116.3	0
2008	0	0	0	60.3	273.4	99.7	102.4	107.1	367.6	223.1	111.3	0
2009	0	0	69.1	182.1	144.7	125.2	97.4	43.1	294.6	86	4.5	0
2010	9.7	13.5	25.7	67.9	71.3	122.6	96.8	207	228.5	255.6	9	0
2011	0	13	20.2	282.2	89.6	57.3	213.8	298.6	204	292.4	4.5	0
2012	24.3	15.5	80.6	112.3	172.7	76.3	92.9	105.1	452.5	137.8	48.5	0
2013	0.7	0	32.8	31.9	81.2	247.2	222.3	245	247.3	309.2	42	0
2014	0	0	19.7	59.6	113.9	75.2	97.3	43.7	71.3	84.8	0	0
2015	0	29.9	24.7	63.2	123.9	89.6	45.9	118	300.7	31	36.4	0
2016	20.5	18.4	8.6	34.5	44.5	124.4	115.8	108	176.9	176.2	17.2	16.3
2017	31.4	56.7	118.6	20.6	138.3	66.3	181.4	143.9	244.3	172.8	46.5	4.1
2018	61.9	24.2	138	129.9	108.8	168.8	160.4	248.7	109.3	119.9	15.6	2.6
2019	0	0	20.4	104.4	60.4	168.4	88.2	98.2	432.4	39.7	7.5	0
2020	12	0	0	96.1	224.5	86.3	248.3	193.8	373.7	289	0	0
2021	0	5	1.5	116.5	111.2	123.7	151.1	223	154.5	156.3	290.5	177.5
2022	0	58.3	228.9	56.6	135.9	52.6	208	386.1	194.2	193.9	18.3	5
2023	1.5	14.5	0	106	105.9	220.1	125.2	118.6	164.4	232.8	34.9	11.2
Ave	8.0	13.5	39.0	98.6	130.4	126.3	156.3	164.1	241.6	170.0	36.9	10.4
Min	0.0	0.0	0.0	20.6	44.5	39.4	45.9	43.1	71.3	31.0	0.0	0.0
Max	61.9	58.3	228.9	282.2	273.4	269.4	329.0	386.1	452.5	309.2	290.5	177.5

Siem Reap Province 373503 N 1479133 E

Monthly Rainfall in mm

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	-	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-	-	-	-	-
2004	1.4	0	0.2	55.6	185.8	397.7	268.5	240.3	331.1	103.5	26.3	0
2005	0	0	0.4	46.6	186.4	124.7	133.2	128.8	428	209.1	90	44.3
2006	8.1	46.7	100.8	63.2	65.3	196.2	274.2	177.7	216.5	228.5	8.1	10.9
2007	0	0	16.1	40.1	187.9	155.6	230.1	133.7	186.1	118.2	28.7	0.3
2008	10	15.3	39.9	84.5	353.3	204.5	141	148.4	288.9	374	92.6	4.7
2009	0	15.3	39.9	86.6	352.4	207.5	141	125.3	289.4	375.7	68	4.7
2010	15.4	0	0.1	12.6	80.8	204.4	271	264.1	273	357.1	52.9	18.1
2011	0	0	86.1	175.7	111.7	190.5	194.8	225.1	537.2	294.6	29.8	4.6
2012	10	15.3	39.9	86.6	352.4	207.5	141	125.3	289.4	375.7	68	4.7
2013	0	0	43.2	65	83.6	67	353.2	244.8	297.2	386.4	108.4	28.3
2014	0	0	13.2	88.6	119.6	184.7	347.2	210	202.6	284	0	0
2015	0	0	0	44.4	41.5	172.2	161.7	363.1	225.8	173.8	52.8	0
2016	19.9	0	0	10.5	64.8	399	262.3	216.2	288.4	252.2	99.9	57.2
2017	61.2	5.3	28.8	251.5	244.4	68.7	110	219.4	264.4	304.5	93.7	13.2
2018	24.6	23	47.9	43.1	149	132.6	124.2	136.6	213.7	100.4	32.3	23.3
2019	0	0	0	113.7	134.3	240.4	144.1	302.1	483.6	101.9	27.4	0
2020	0	0	25	196.6	303.2	638	331.9	451.5	425.9	269.6	32.2	11.4
2021	0	5.7	0	61.4	129.5	164.2	301.5	56.1	260.7	247.4	108.1	0
2022	0	207.4	81.7	75.7	343.4	32.1	311.5	322	394.4	181.2	48.6	30.8
2023	1.5	14.5	0	106	105.9	220.1	125.2	118.6	164.4	232.8	34.9	11.2
Ave	7.6	17.4	28.2	85.4	179.8	210.4	218.4	210.5	303.0	248.5	55.1	13.4
Min	0.0	0.0	0.0	10.5	41.5	32.1	110.0	56.1	164.4	100.4	0.0	0.0
Max	61.2	207.4	100.8	251.5	353.3	638.0	353.2	451.5	537.2	386.4	108.4	57.2

Kampong Speu Province **Longitude:104° 34' E** **Latitude: 11° 28' N**

Monthly Rainfall in mm

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	7.5	0	0	155.8	124.5	116.8	111.8	96.7	256.4	347.1	189	12.4
1997	0	0	0	0	193	247	94	121	298	324	30	22
1998	0	0	17	101	144	121	78	204	366	308	140	11
1999	14	0	40	140	239	147	281	168	325	69	0	0
2000	0	0	84	98.9	113.9	154.8	131.5	169.7	221.5	415.9	177.7	131.2
2001	189.7	0	216.9	46.1	110.5	215.9	78.9	213.1	345.9	328.9	18	4.3
2002	0	0	98.7	113.6	38.3	49.2	25.4	204.3	109.7	163	80.4	54.3
2003	0	0	31.3	56.6	230.6	68.9	232.9	89.1	166.7	151	18.8	2.6
2004	3.4	18.5	12.3	72.7	145.3	126.7	144.9	33.1	149.3	205.4	37.8	0
2005	0	0	1.3	75.3	42.6	81.7	239.1	71.5	149.2	301	88	64.3
2006	1.2	44.1	18.8	201.5	171.5	101.9	54.4	284.5	206.3	80.3	6.3	7.4
2007	0	0	42.5	110	163.7	143.5	103.2	147	157.6	128.3	115.5	0
2008	0	0	67.1	106.5	100.6	133.1	21.4	197.7	233	194.5	133.8	0
2009	0	0	8.8	282.6	268.2	96.5	119.7	142.2	180.6	241.7	0	0
2010	26.2	22.1	148.6	40.5	191.6	80.8	126.5	147.4	147.4	236.8	51.7	0
2011	0	0	158.9	79.3	109.6	164	58.7	246.3	121.9	330.8	105.2	3.6
2012	56.7	9.8	23.2	68	208.2	46.9	232	114.4	376.6	185.7	122.8	0
2013	0	0	46	122.1	97.7	183.2	130.8	161.9	32.3	245.8	245.8	32.3
2014	0	1.2	0	94.8	52.5	117.8	87.3	135.4	216.2	182	0	0
2015	0.8	0	0	65.5	38.4	128.4	61.9	93.6	279.8	112	193	69.4
2016	0	0	0	4.5	97.4	175.1	189.4	15.8	251	409.8	154.5	132.5
2017	4	0	31.5	90.2	119	74.2	108.5	157	268	158.5	96	30
2018	35.5	7	12	65	100	148.5	56	94	235.5	314	82	32
2019	0	0	15.5	51	134.5	119.5	85	146.5	209.5	278	55	0
2020	10.8	0	8	54.8	71.2	175.6	119.5	141.2	250.4	484.2	29.4	24
2021	0	39	2.2	108.2	150.4	40	96	278	270.8	243.5	272.5	35
2022	5.5	14.5	107.2	143	177	116	174	174	295	329	158	20
2023	114.4	10	0	125	257	154	202.7	147	203	300.8	180	46
Ave	16.8	5.9	42.6	95.4	138.9	126.0	123.0	149.8	225.8	252.5	99.3	26.2
Min	0.0	0.0	0.0	0.0	38.3	40.0	21.4	15.8	32.3	69.0	0.0	0.0
Max	189.7	44.1	216.9	282.6	268.2	247.0	281.0	284.5	376.6	484.2	272.5	132.5

BASIN ID : 1

BASIN NAME : Se San River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			4	159	159	192	278	220	245	117	29	5
2015	1	0	8	42	213	278	220	128	238	94	31	0
2016	0	0	0	44	171	251	218	152	371	193	57	56
2017	4	2	101	87	324	177	302	224	515	135	84	7
2018	4	1	9	37	295	297	264	299	313	74	8	8
2019	1	0	24	47	210	142	178	210	166	100	22	1
2020	1	1	1	61	149	148	192	198	317	525	67	4
2021	1	2	4	89	250	158	337	292	450	435	68	10
2022	1	5	102	99	216	137	263	272	401	218	29	4
2023	16	4	2	117	177	167	294	133	280	204	34	1

② MONTHLY RAINFALL FROM 2014 - 2023

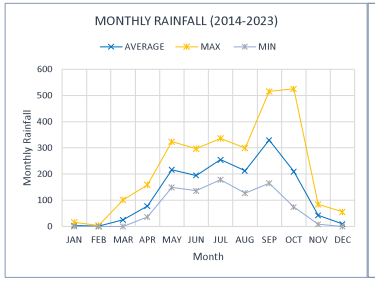
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	3	2	26	78	216	195	255	213	330	210	43	10
MAX	16	5	102	159	324	297	337	299	515	525	84	56
MIN	0	0	0	37	149	137	178	128	166	74	8	0
STDEV	1.5	0.8	1.5	0.5	0.3	0.3	0.2	0.3	0.3	0.7	0.5	1.6

Annual Average 1,579

Wet Season (Apr-Oct) Variability 0.35

Wet Season (Apr-Jun) Variability 0.34

③ VISUALIZATION



BASIN ID : 2

BASIN NAME : Se Kong River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			7	196	162	224	266	239	286	170	18	9
2015	1	0	7	41	161	286	286	141	246	104	48	0
2016	0	0	0	40	216	311	232	165	429	182	56	39
2017	3	1	109	77	356	226	339	268	558	143	85	5
2018	18	1	20	43	318	291	291	304	292	128	11	3
2019	1	0	43	43	188	129	234	249	262	94	27	1
2020	0	1	0	86	185	164	142	204	296	514	43	3
2021	1	2	8	107	246	144	307	280	420	468	67	1
2022	1	3	88	116	231	122	248	227	392	189	23	4
2023	17	4	3	88	160	148	266	176	295	185	33	1

② MONTHLY RAINFALL FROM 2014 - 2023

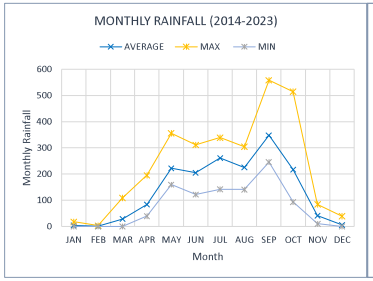
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	5	1	29	84	222	205	261	225	348	218	41	7
MAX	18	4	109	196	356	311	339	304	558	514	85	39
MIN	0	0	0	40	160	122	142	141	246	94	11	0
STDEV	1.5	0.9	1.3	0.6	0.3	0.3	0.2	0.2	0.3	0.6	0.5	1.7

Annual Average 1,644

Wet Season (Apr-Oct) Variability 0.36

Wet Season (Apr-Jun) Variability 0.39

③ VISUALIZATION



BASIN ID : 3

BASIN NAME : Sre Pok River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

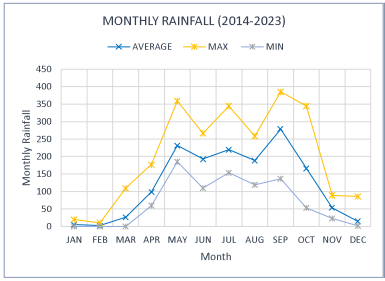
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			5	177	196	187	289	209	203	131	23	9
2015	0	1	7	60	186	217	181	119	181	100	39	2
2016	1	0	0	60	200	244	193	156	306	164	66	86
2017	12	10	93	113	359	173	169	200	359	127	58	17
2018	8	2	16	72	277	267	204	197	311	53	43	14
2019	4	1	25	76	211	131	154	184	137	81	51	2
2020	1	1	2	94	185	230	224	164	293	345	89	2
2021	2	2	3	122	218	110	260	253	385	323	83	6
2022	2	8	110	95	265	179	179	258	330	174	54	6
2023	20	2	4	120	217	189	344	147	284	163	28	4

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	6	3	27	99	231	193	220	189	279	166	54	15
MAX	20	10	110	177	359	267	344	258	385	345	89	86
MIN	0	0	0	60	185	110	154	119	137	53	23	2
STDEV	1.1	1.1	1.4	0.3	0.2	0.2	0.3	0.2	0.3	0.6	0.4	1.6

Annual Average	**1,480**
Wet Season (Apr-Oct) Variability	**0.30**
Wet Season (Apr-Jun) Variability	**0.27**

③ VISUALIZATION



BASIN ID : 4

BASIN NAME : Huai Tomo River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

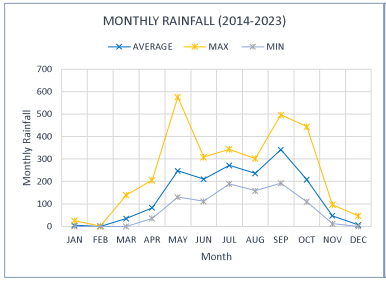
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			9	207	172	285	332	302	269	218	13	11
2015	0	1	8	36	131	234	323	164	193	130	31	0
2016	0	0	0	39	226	309	203	197	429	174	71	47
2017	2	1	140	93	576	189	343	281	497	149	97	4
2018	26	0	17	47	397	301	320	284	336	235	16	1
2019	3	0	61	45	185	112	276	263	242	110	33	0
2020	0	0	0	80	202	182	190	159	317	444	49	3
2021	1	2	0	88	185	145	281	295	411	329	95	0
2022	1	1	118	101	219	206	250	214	386	153	21	1
2023	18	1	1	96	190	145	205	200	343	139	49	0

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	6	1	35	83	248	211	272	236	342	208	48	7
MAX	26	2	140	207	576	309	343	302	497	444	97	47
MIN	0	0	0	36	131	112	190	159	193	110	13	0
STDEV	1.6	0.7	1.4	0.6	0.5	0.3	0.2	0.2	0.3	0.5	0.6	2.0

Annual Average	**1,697**
Wet Season (Apr-Oct) Variability	**0.37**
Wet Season (Apr-Jun) Variability	**0.47**

③ VISUALIZATION



BASIN ID : 5

BASIN NAME : Prek Preah River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

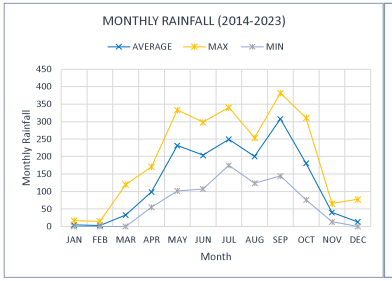
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			8	170	322	250	340	229	266	178	14	35
2015	0	0	15	68	101	183	253	171	144	136	24	0
2016	0	0	0	64	237	298	213	190	346	212	66	78
2017	3	15	120	141	333	195	242	251	370	177	55	9
2018	15	2	15	61	326	266	277	235	348	76	22	2
2019	2	1	45	55	190	138	203	198	199	79	39	2
2020	1	2	1	101	167	217	175	124	288	311	59	2
2021	1	3	1	124	164	107	289	183	382	284	49	1
2022	4	4	121	117	259	163	217	254	359	168	29	1
2023	16	4	4	92	214	218	284	174	371	189	50	1

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	5	3	33	99	231	204	249	201	307	181	41	13
MAX	16	15	121	170	333	298	340	254	382	311	66	78
MIN	0	0	0	55	101	107	175	124	144	76	14	0
STDEV	1.2	1.3	1.4	0.4	0.3	0.3	0.2	0.2	0.3	0.4	0.4	1.8

Annual Average	**1,568**
Wet Season (Apr-Oct) Variability	**0.29**
Wet Season (Apr-Jun) Variability	**0.32**

③ VISUALIZATION



BASIN ID : 6

BASIN NAME : Prek Mun River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

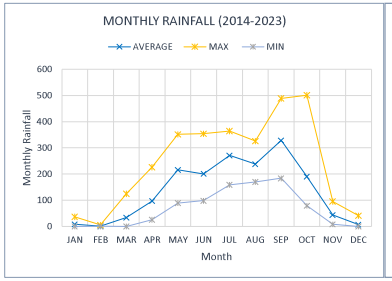
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			10	226	172	324	324	278	258	210	8	20
2015	3	1	8	40	90	222	339	170	184	110	12	0
2016	0	2	0	26	242	354	198	184	415	166	76	41
2017	4	2	125	210	351	190	329	223	489	132	88	4
2018	38	1	20	58	275	244	364	275	265	116	17	1
2019	1	1	54	49	172	99	307	248	285	79	28	1
2020	1	2	0	76	213	144	159	204	271	500	40	4
2021	2	2	0	86	206	134	227	258	385	326	95	1
2022	2	6	120	104	260	140	258	326	360	136	20	1
2023	27	1	2	96	177	160	202	219	366	128	54	0

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	9	2	34	97	216	201	271	239	328	190	44	7
MAX	38	6	125	226	351	354	364	326	489	500	95	41
MIN	0	1	0	26	90	99	159	170	184	79	8	0
STDEV	1.5	0.8	1.4	0.7	0.3	0.4	0.2	0.2	0.3	0.6	0.7	1.7

Annual Average	**1,637**
Wet Season (Apr-Oct) Variability	**0.39**
Wet Season (Apr-Jun) Variability	**0.46**

③ VISUALIZATION



BASIN ID : 7

BASIN NAME : O Talas River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			10	232	148	346	356	264	284	167	7	19
2015	1	0	11	45	96	179	329	190	153	102	11	0
2016	0	1	0	27	250	297	221	178	414	147	79	42
2017	2	1	125	247	362	181	329	208	471	134	70	5
2018	26	0	18	69	225	211	383	255	278	132	21	1
2019	0	2	46	61	167	85	326	247	319	61	41	0
2020	0	0	0	51	226	143	141	212	288	492	32	2
2021	0	2	0	89	193	112	198	249	363	275	77	1
2022	2	12	115	108	249	121	249	313	343	163	19	0
2023	29	1	1	144	198	182	203	225	385	128	51	1

② MONTHLY RAINFALL FROM 2014 - 2023

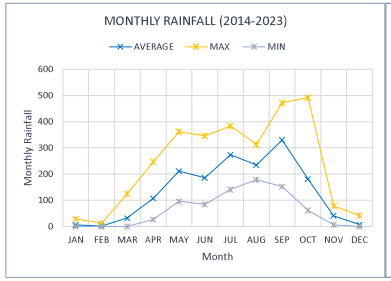
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	7	2	33	107	211	186	274	234	330	180	41	7
MAX	29	12	125	247	362	346	383	313	471	492	79	42
MIN	0	0	0	27	96	85	141	178	153	61	7	0
STDEV	1.7	1.6	1.4	0.7	0.3	0.4	0.3	0.2	0.3	0.6	0.6	1.8

Annual Average **1,612**

Wet Season (Apr-Oct) Variability **0.39**

Wet Season (Apr-Jun) Variability **0.47**

③ VISUALIZATION



BASIN ID : 8

BASIN NAME : Siem Bok River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			15	148	168	286	347	192	248	204	12	15
2015	1	3	5	69	95	143	223	180	145	155	34	1
2016	0	0	1	38	203	312	274	206	302	275	106	87
2017	5	9	101	135	313	205	279	224	335	157	100	9
2018	12	7	19	60	271	239	244	171	277	127	59	8
2019	3	0	39	33	173	130	260	188	227	67	35	0
2020	0	0	0	125	179	199	178	144	253	287	35	2
2021	0	3	3	147	208	83	266	226	363	256	68	5
2022	1	14	128	92	223	190	252	279	325	228	49	2
2023	33	8	1	83	154	239	268	177	408	185	107	1

② MONTHLY RAINFALL FROM 2014 - 2023

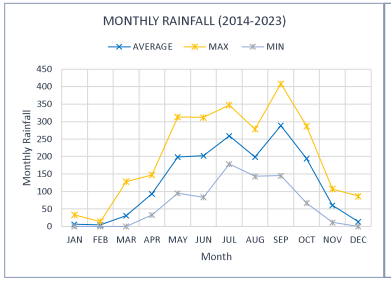
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	6	5	31	93	199	203	259	199	288	194	60	13
MAX	33	14	128	148	313	312	347	279	408	287	107	87
MIN	0	0	0	33	95	83	178	144	145	67	12	0
STDEV	1.6	0.9	1.4	0.4	0.3	0.3	0.2	0.2	0.2	0.3	0.5	1.9

Annual Average **1,551**

Wet Season (Apr-Oct) Variability **0.28**

Wet Season (Apr-Jun) Variability **0.36**

③ VISUALIZATION



BASIN ID : 9

BASIN NAME : Prek Krieng River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

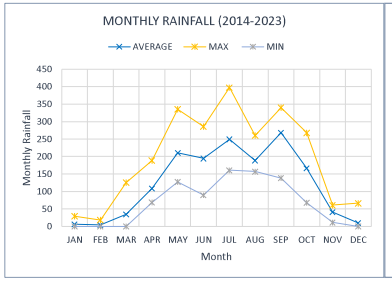
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			5	157	246	256	397	210	236	181	12	12
2015	1	1	14	75	128	165	260	157	138	110	20	0
2016	1	0	0	77	209	286	247	229	274	237	61	66
2017	4	19	122	134	335	190	220	182	301	163	49	11
2018	30	2	25	78	279	235	254	180	307	68	34	3
2019	3	0	35	69	165	150	195	169	196	70	47	0
2020	0	0	4	100	144	212	196	167	254	268	59	1
2021	0	2	8	189	149	90	258	175	320	262	37	2
2022	2	6	126	105	258	142	161	260	316	163	40	2
2023	19	8	7	104	192	223	305	158	340	148	51	1

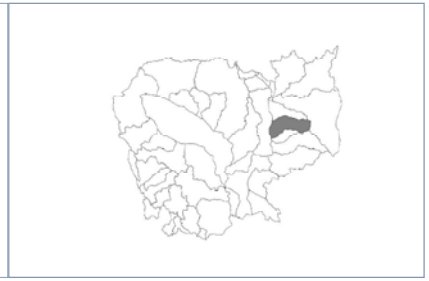
② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	7	4	34	109	211	195	249	189	268	167	41	10
MAX	30	19	126	189	335	286	397	260	340	268	61	66
MIN	0	0	0	69	128	90	161	157	138	68	12	0
STDEV	1.5	1.3	1.3	0.3	0.3	0.3	0.3	0.2	0.2	0.4	0.4	1.9

Annual Average	**1,484**
Wet Season (Apr-Oct) Variability	**0.29**
Wet Season (Apr-Jun) Variability	**0.31**

③ VISUALIZATION





BASIN ID : 10

BASIN NAME : Prek Kamp River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

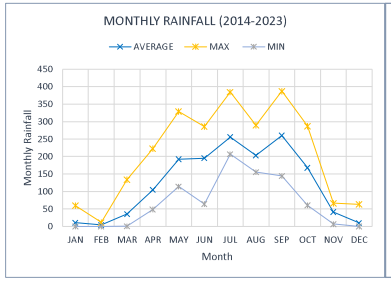
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			4	126	208	258	385	202	228	200	7	12
2015	1	2	4	71	130	137	235	207	145	103	20	0
2016	1	0	1	67	150	286	265	274	242	287	46	63
2017	4	12	134	137	329	205	225	194	310	187	54	13
2018	60	9	40	72	252	264	229	166	263	69	43	3
2019	5	1	32	48	143	131	217	156	180	61	55	1
2020	0	0	6	113	114	216	211	200	204	248	46	1
2021	0	1	11	222	147	64	274	176	321	230	28	4
2022	0	10	117	91	271	168	207	290	323	174	49	2
2023	27	10	8	100	180	225	310	170	387	121	67	0

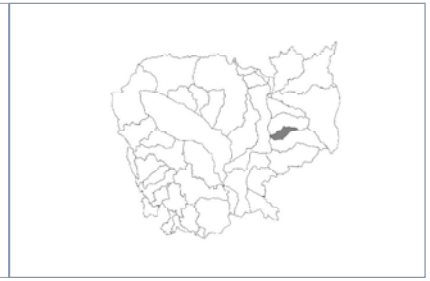
② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	11	5	36	105	192	196	256	203	260	168	41	10
MAX	60	12	134	222	329	286	385	290	387	287	67	63
MIN	0	0	1	48	114	64	207	156	145	61	7	0
STDEV	1.7	0.9	1.3	0.5	0.3	0.3	0.2	0.2	0.3	0.4	0.4	1.8

Annual Average	**1,483**
Wet Season (Apr-Oct) Variability	**0.32**
Wet Season (Apr-Jun) Variability	**0.38**

③ VISUALIZATION





BASIN ID : 11

BASIN NAME : Prek Te River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

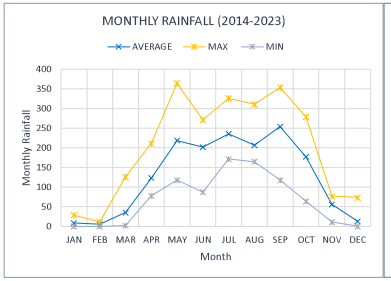
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			9	181	274	247	311	198	230	209	11	13
2015	1	2	2	99	118	150	186	166	118	105	32	3
2016	1	0	2	78	154	271	265	235	196	257	63	73
2017	10	9	126	122	364	175	172	204	313	201	57	16
2018	28	11	30	114	338	234	227	165	284	64	56	5
2019	8	3	34	87	174	157	180	184	147	72	77	0
2020	0	0	9	122	140	256	234	199	235	269	70	5
2021	0	1	9	211	174	87	255	221	349	279	42	9
2022	1	12	121	92	271	215	199	310	311	170	74	4
2023	28	10	11	128	178	229	326	183	354	145	77	3

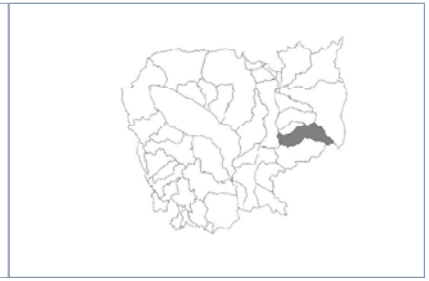
② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	9	5	35	123	218	202	235	206	254	177	56	13
MAX	28	12	126	211	364	271	326	310	354	279	77	73
MIN	0	0	2	78	118	87	172	165	118	64	11	0
STDEV	1.3	0.9	1.3	0.3	0.4	0.3	0.2	0.2	0.3	0.4	0.4	1.6

Annual Average	**1,535**
Wet Season (Apr-Oct) Variability	**0.30**
Wet Season (Apr-Jun) Variability	**0.32**

③ VISUALIZATION





BASIN ID : 12

BASIN NAME : Prek Chhlong River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

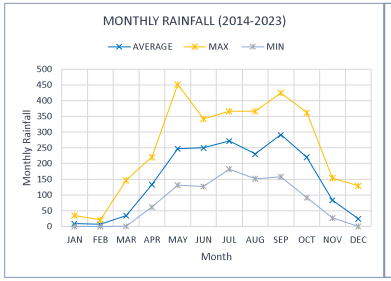
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			10	197	277	324	280	194	314	248	27	35
2015	2	4	1	139	139	156	191	224	158	152	58	9
2016	0	0	3	62	200	286	308	271	217	362	72	129
2017	9	19	147	131	402	210	241	277	424	220	90	17
2018	16	13	26	125	451	212	241	162	274	92	82	7
2019	15	0	30	69	176	243	182	172	189	144	92	0
2020	0	1	3	144	132	317	294	152	284	254	67	19
2021	1	2	13	221	239	127	310	301	408	281	86	13
2022	1	21	110	107	286	280	306	366	311	234	105	9
2023	35	5	7	141	167	342	366	185	337	214	154	3

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	9	7	35	134	247	250	272	230	292	220	83	24
MAX	35	21	147	221	451	342	366	366	424	362	154	129
MIN	0	0	1	62	132	127	182	152	158	92	27	0
STDEV	1.3	1.1	1.4	0.4	0.4	0.3	0.2	0.3	0.3	0.3	0.4	1.5

Annual Average	**1,802**
Wet Season (Apr-Oct) Variability	**0.31**
Wet Season (Apr-Jun) Variability	**0.35**

③ VISUALIZATION



BASIN ID : 13

BASIN NAME : Delta (1) River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			3	181	100	247	282	134	225	241	38	19
2015	4	2	1	52	98	168	164	193	200	191	91	23
2016	0	0	1	64	253	246	274	185	291	505	163	108
2017	8	31	56	138	276	169	254	219	282	249	133	47
2018	28	12	23	40	234	153	126	100	204	246	94	28
2019	9	0	26	32	149	248	193	146	212	187	39	0
2020	0	1	0	119	92	305	215	115	311	269	47	30
2021	2	3	4	135	231	95	286	312	389	305	238	20
2022	1	35	99	81	207	174	298	230	303	329	116	33
2023	31	22	1	102	121	233	300	154	329	245	255	5

② MONTHLY RAINFALL FROM 2014 - 2023

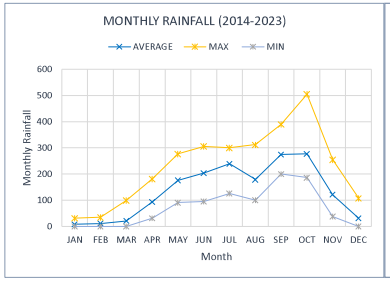
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	9	12	21	94	176	204	239	179	275	277	121	31
MAX	31	35	99	181	276	305	300	312	389	505	255	108
MIN	0	0	0	32	92	95	126	100	200	187	38	0
STDEV	1.2	1.1	1.5	0.5	0.4	0.3	0.2	0.3	0.2	0.3	0.6	0.9

Annual Average **1,638**

Wet Season (Apr-Oct) Variability **0.32**

Wet Season (Apr-Jun) Variability **0.39**

③ VISUALIZATION



BASIN ID : 14

BASIN NAME : Prek Kampong Spean River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			1	195	115	287	334	165	335	331	65	14
2015	3	1	1	57	104	185	201	246	213	224	88	17
2016	0	0	0	49	236	255	340	200	294	556	133	147
2017	4	31	70	113	299	202	263	259	360	258	183	40
2018	38	8	40	43	266	154	153	112	219	242	134	17
2019	9	0	33	42	180	242	165	146	251	215	56	0
2020	0	1	1	174	94	362	201	93	321	231	79	18
2021	0	1	6	150	260	124	291	372	427	308	248	30
2022	1	57	87	98	231	194	325	274	346	312	126	15
2023	34	15	0	105	141	262	368	175	401	299	357	11

② MONTHLY RAINFALL FROM 2014 - 2023

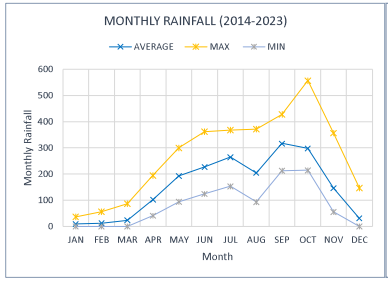
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	10	12	24	102	193	227	264	204	317	298	147	31
MAX	38	57	87	195	299	362	368	372	427	556	357	147
MIN	0	0	0	42	94	124	153	93	213	215	56	0
STDEV	1.4	1.5	1.3	0.5	0.4	0.3	0.3	0.4	0.2	0.3	0.6	1.3

Annual Average **1,828**

Wet Season (Apr-Oct) Variability **0.34**

Wet Season (Apr-Jun) Variability **0.39**

③ VISUALIZATION



BASIN ID : 15

BASIN NAME : Kampong Chamlang River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			0	135	70	229	314	168	184	204	75	19
2015	3	2	0	32	103	221	185	222	221	225	139	33
2016	0	0	0	28	243	238	421	221	364	533	170	94
2017	18	65	32	78	267	221	226	206	410	391	210	151
2018	20	1	8	31	321	155	131	111	294	353	151	72
2019	18	0	15	69	150	265	178	145	305	333	69	1
2020	0	1	0	123	88	385	242	178	345	286	62	43
2021	0	0	1	106	218	95	222	406	366	405	256	30
2022	2	35	120	129	308	190	258	180	334	311	125	78
2023	28	2	0	139	151	203	326	161	324	326	181	11

② MONTHLY RAINFALL FROM 2014 - 2023

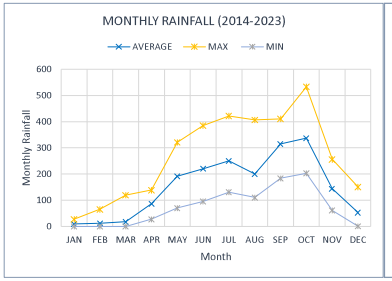
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	10	12	18	87	192	220	250	200	315	337	144	53
MAX	28	65	120	139	321	385	421	406	410	533	256	151
MIN	0	0	0	28	70	95	131	111	184	204	62	1
STDEV	1.0	1.8	2.0	0.5	0.5	0.3	0.3	0.4	0.2	0.3	0.4	0.8

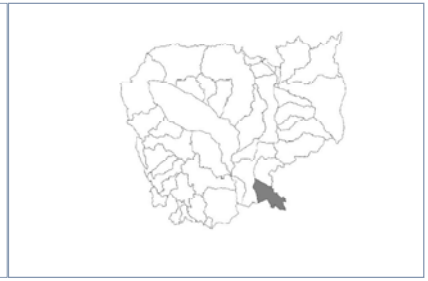
Annual Average **1,837**

Wet Season (Apr-Oct) Variability **0.35**

Wet Season (Apr-Jun) Variability **0.42**

③ VISUALIZATION





BASIN ID : 16

BASIN NAME : Delta (2) River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			1	120	87	210	250	107	124	217	42	29
2015	5	1	1	47	76	159	131	148	180	153	144	39
2016	0	1	0	31	211	200	209	139	291	521	232	80
2017	14	45	24	171	217	156	241	155	207	296	108	72
2018	31	7	9	16	233	143	105	89	171	339	55	41
2019	12	0	16	26	125	268	162	132	188	212	29	4
2020	0	1	0	89	65	279	269	136	339	352	47	53
2021	5	3	1	104	167	81	188	329	291	341	342	29
2022	3	13	98	73	216	128	267	165	275	356	123	70
2023	18	1	1	126	122	214	246	139	317	290	245	5

② MONTHLY RAINFALL FROM 2014 - 2023

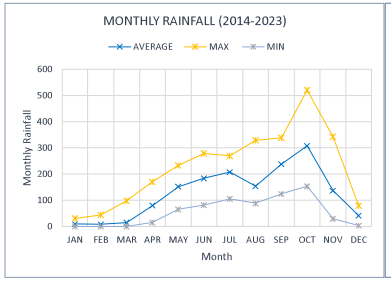
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	10	8	15	80	152	184	207	154	238	308	137	42
MAX	31	45	98	171	233	279	269	329	339	521	342	80
MIN	0	0	0	16	65	81	105	89	124	153	29	4
STDEV	1.0	1.7	1.9	0.6	0.4	0.3	0.3	0.4	0.3	0.3	0.7	0.6

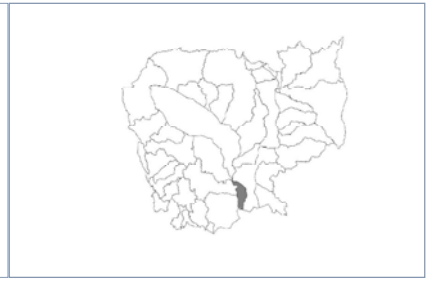
Annual Average **1,534**

Wet Season (Apr-Oct) Variability **0.37**

Wet Season (Apr-Jun) Variability **0.44**

③ VISUALIZATION





BASIN ID : 17

BASIN NAME : St. Chinit River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

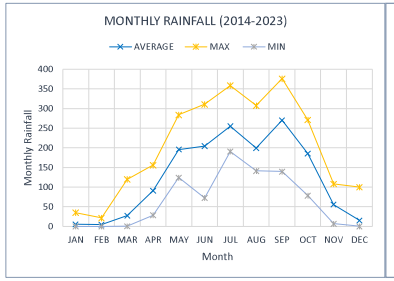
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			20	111	174	287	358	172	229	177	7	24
2015	0	2	4	70	124	149	192	212	140	149	32	2
2016	0	0	0	38	214	311	291	195	302	269	78	100
2017	4	6	63	142	284	225	283	236	300	148	108	12
2018	4	8	22	70	240	209	216	142	251	90	69	8
2019	3	0	40	29	182	128	275	164	220	79	36	0
2020	0	0	1	121	155	221	191	195	240	271	28	0
2021	1	4	2	156	220	72	244	212	359	224	56	5
2022	0	22	120	100	204	182	237	308	285	222	36	2
2023	35	3	1	75	162	260	262	157	376	225	107	1

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	5	5	27	91	196	204	255	199	270	186	56	15
MAX	35	22	120	156	284	311	358	308	376	271	108	100
MIN	0	0	0	29	124	72	191	142	140	79	7	0
STDEV	2.0	1.3	1.3	0.4	0.2	0.3	0.2	0.2	0.2	0.3	0.6	1.9

Annual Average	**1,510**
Wet Season (Apr-Oct) Variability	**0.29**
Wet Season (Apr-Jun) Variability	**0.34**

③ VISUALIZATION



BASIN ID : 18

BASIN NAME : Tonle Repon River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

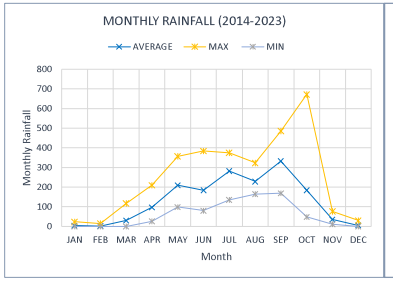
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			10	210	144	384	331	222	280	171	12	18
2015	1	2	13	46	99	202	357	216	169	112	21	0
2016	1	1	1	26	247	320	262	164	376	149	69	31
2017	2	1	101	174	357	174	338	213	486	107	51	3
2018	20	0	20	73	231	176	376	219	259	48	19	1
2019	0	0	47	71	154	92	347	230	347	65	19	1
2020	0	1	0	44	249	136	136	251	293	672	19	1
2021	0	3	0	95	169	122	158	206	384	247	76	3
2022	1	15	117	105	219	81	287	323	335	114	30	1
2023	23	2	1	127	227	156	228	241	395	157	46	1

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	5	3	31	97	210	184	282	229	332	184	36	6
MAX	23	15	117	210	357	384	376	323	486	672	76	31
MIN	0	0	0	26	99	81	136	164	169	48	12	0
STDEV	1.7	1.7	1.3	0.6	0.3	0.5	0.3	0.2	0.2	0.9	0.6	1.6

Annual Average	**1,599**
Wet Season (Apr-Oct) Variability	**0.43**
Wet Season (Apr-Jun) Variability	**0.47**

③ VISUALIZATION



BASIN ID : 19

BASIN NAME : St. Sen River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

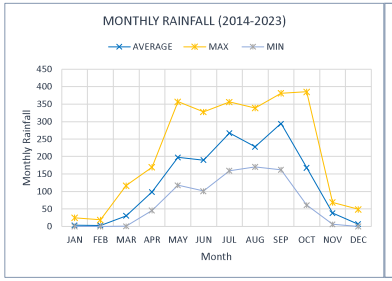
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			11	170	118	328	338	210	242	136	6	6
2015	0	4	10	69	134	141	291	225	162	129	58	1
2016	2	0	1	46	234	305	263	200	347	181	69	49
2017	3	1	86	101	357	226	356	241	337	132	64	5
2018	2	1	21	114	218	169	297	171	225	61	27	4
2019	1	0	51	56	196	101	309	270	294	75	18	1
2020	0	0	1	59	198	174	160	214	240	385	17	0
2021	0	2	1	132	138	108	169	212	373	211	50	2
2022	1	19	117	110	201	133	258	339	342	160	28	1
2023	25	2	6	136	182	214	228	196	381	208	50	4

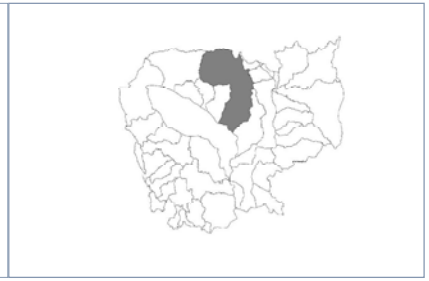
② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	4	3	31	99	198	190	267	228	294	168	39	7
MAX	25	19	117	170	357	328	356	339	381	385	69	49
MIN	0	0	1	46	118	101	160	171	162	61	6	0
STDEV	2.0	1.7	1.3	0.4	0.3	0.4	0.2	0.2	0.2	0.5	0.5	2.0

Annual Average	**1,527**
Wet Season (Apr-Oct) Variability	**0.33**
Wet Season (Apr-Jun) Variability	**0.37**

③ VISUALIZATION





BASIN ID : 20

BASIN NAME : St. Staung River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

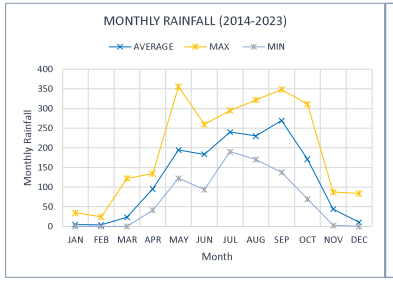
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			5	134	123	260	286	184	228	126	3	2
2015	0	1	6	75	138	143	253	238	137	104	63	0
2016	1	0	0	63	246	257	230	216	337	235	72	84
2017	2	3	62	106	356	246	295	269	295	152	87	8
2018	3	2	15	110	200	170	229	170	245	70	28	7
2019	1	0	20	43	215	108	268	256	248	81	19	1
2020	0	0	0	41	170	210	190	203	213	311	19	0
2021	0	2	0	126	137	94	197	230	313	180	54	1
2022	1	25	122	135	209	162	252	322	325	182	29	1
2023	35	1	4	125	150	185	201	211	349	270	70	2

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	5	4	24	96	194	183	240	230	269	171	44	11
MAX	35	25	122	135	356	260	295	322	349	311	87	84
MIN	0	0	0	41	123	94	190	170	137	70	3	0
STDEV	2.2	2.0	1.6	0.4	0.3	0.3	0.1	0.2	0.2	0.4	0.6	2.3

Annual Average	**1,471**
Wet Season (Apr-Oct) Variability	**0.29**
Wet Season (Apr-Jun) Variability	**0.34**

③ VISUALIZATION



BASIN ID : 21

BASIN NAME : St. Chikreng River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

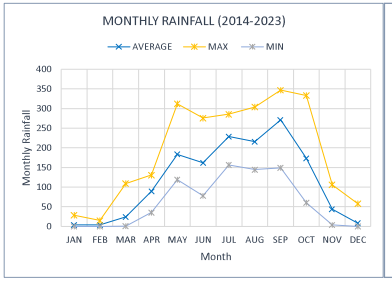
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			7	108	119	276	231	145	227	116	4	1
2015	0	2	6	79	122	115	285	239	149	109	64	0
2016	2	0	1	36	209	213	273	208	328	216	68	58
2017	2	15	65	116	312	210	258	244	226	172	106	7
2018	5	2	21	82	195	136	224	155	265	85	14	10
2019	0	0	22	58	234	78	245	249	289	61	19	1
2020	0	0	1	52	158	202	156	190	235	333	12	1
2021	0	2	1	127	139	80	176	230	320	170	51	1
2022	2	13	109	109	183	149	209	304	346	160	40	2
2023	28	2	11	131	164	158	231	191	326	315	64	2

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	4	4	25	90	184	162	229	216	271	174	44	8
MAX	28	15	109	131	312	276	285	304	346	333	106	58
MIN	0	0	1	36	119	78	156	145	149	61	4	0
STDEV	2.0	1.3	1.4	0.4	0.3	0.4	0.2	0.2	0.2	0.5	0.7	2.0

Annual Average	**1,409**
Wet Season (Apr-Oct) Variability	**0.30**
Wet Season (Apr-Jun) Variability	**0.34**

③ VISUALIZATION



BASIN ID : 22

BASIN NAME : St. Sreng River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

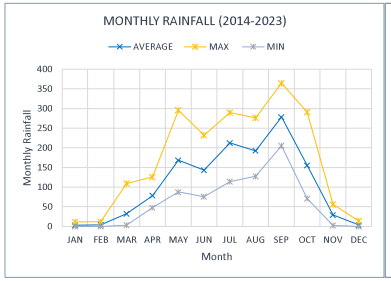
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			12	126	115	208	238	149	229	102	9	2
2015	1	9	15	66	88	116	290	170	205	106	56	0
2016	7	0	3	48	177	232	232	198	271	183	28	14
2017	2	11	109	82	295	176	271	224	273	145	40	3
2018	6	3	42	72	168	112	227	128	217	71	9	11
2019	1	1	25	80	211	78	128	256	343	78	9	0
2020	0	0	8	71	166	154	136	199	252	291	3	3
2021	0	1	8	108	146	76	114	158	364	212	44	1
2022	2	12	97	57	184	99	258	276	357	122	44	1
2023	12	4	10	78	139	184	228	168	270	242	48	4

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	3	5	33	79	169	143	212	193	278	155	29	4
MAX	12	12	109	126	295	232	290	276	364	291	56	14
MIN	0	0	3	48	88	76	114	128	205	71	3	0
STDEV	1.1	1.0	1.1	0.3	0.3	0.4	0.3	0.2	0.2	0.5	0.6	1.1

Annual Average	**1,303**
Wet Season (Apr-Oct) Variability	**0.30**
Wet Season (Apr-Jun) Variability	**0.32**

③ VISUALIZATION



BASIN ID : 23

BASIN NAME : St. Siem Reap River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			3	85	104	245	199	135	180	121	7	2
2015	0	3	8	59	81	110	253	237	154	106	80	0
2016	4	0	1	20	185	172	236	188	270	221	59	48
2017	4	19	64	117	279	165	221	222	216	194	96	6
2018	5	3	33	61	174	135	201	133	278	79	8	8
2019	1	0	30	45	209	64	169	231	359	66	18	0
2020	0	0	2	49	139	188	138	189	246	282	9	1
2021	0	5	1	104	139	86	144	203	302	162	78	1
2022	1	8	90	80	204	111	220	286	327	152	45	6
2023	33	4	10	116	142	166	241	179	280	308	62	3

② MONTHLY RAINFALL FROM 2014 - 2023

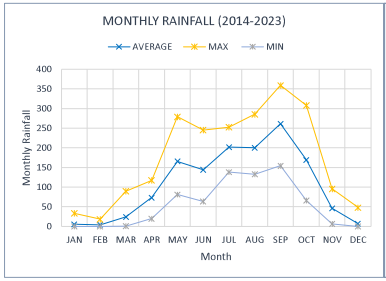
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	5	5	24	74	166	144	202	200	261	169	46	8
MAX	33	19	90	117	279	245	253	286	359	308	96	48
MIN	0	0	1	20	81	64	138	133	154	66	7	0
STDEV	1.8	1.2	1.2	0.4	0.3	0.4	0.2	0.2	0.2	0.5	0.7	1.8

Annual Average **1,304**

Wet Season (Apr-Oct) Variability **0.31**

Wet Season (Apr-Jun) Variability **0.37**

③ VISUALIZATION



BASIN ID : 24

BASIN NAME : St. Mongkol Borey River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			17	98	94	123	130	135	161	105	9	1
2015	0	14	27	72	85	113	121	109	191	122	42	0
2016	19	1	11	52	157	137	195	135	218	178	28	19
2017	5	13	123	61	244	104	132	192	235	153	72	6
2018	24	8	33	127	161	93	132	98	190	104	8	30
2019	1	3	68	120	152	95	78	171	273	67	5	0
2020	0	0	19	114	188	163	144	201	227	339	6	6
2021	1	1	18	166	174	79	117	144	410	195	60	8
2022	3	34	78	59	140	65	163	236	273	222	43	7
2023	7	3	34	101	115	126	175	155	218	194	61	2

② MONTHLY RAINFALL FROM 2014 - 2023

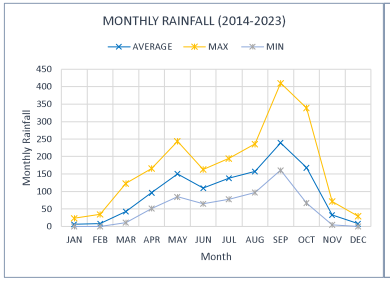
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	7	9	43	97	151	110	139	157	240	168	33	8
MAX	24	34	123	166	244	163	195	236	410	339	72	30
MIN	0	0	11	52	85	65	78	98	161	67	5	0
STDEV	1.2	1.2	0.8	0.4	0.3	0.2	0.2	0.3	0.3	0.4	0.7	1.1

Annual Average **1,161**

Wet Season (Apr-Oct) Variability **0.30**

Wet Season (Apr-Jun) Variability **0.30**

③ VISUALIZATION



BASIN ID : 25

BASIN NAME : Tonle Sap River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

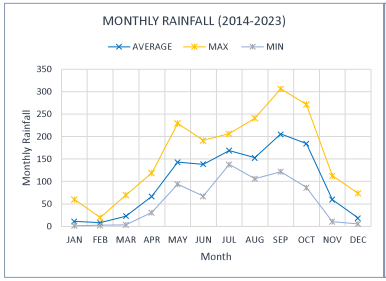
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			10	57	99	174	186	106	143	168	11	10
2015	7	7	7	62	94	121	144	154	122	91	65	6
2016	4	7	4	31	150	191	207	126	254	237	77	74
2017	6	13	65	79	230	133	192	170	177	161	109	20
2018	11	12	23	63	157	131	138	115	174	131	25	25
2019	3	3	28	44	157	103	161	148	216	87	18	7
2020	1	4	4	52	129	191	155	173	208	241	16	9
2021	4	7	14	119	147	67	150	152	306	208	113	14
2022	5	20	70	83	154	106	185	241	232	248	64	15
2023	60	5	8	79	113	166	170	142	223	271	102	8

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	11	9	23	67	143	138	169	153	205	184	60	19
MAX	60	20	70	119	230	191	207	241	306	271	113	74
MIN	1	3	4	31	94	67	138	106	122	87	11	6
STDEV	1.5	0.6	1.0	0.3	0.3	0.3	0.1	0.2	0.2	0.3	0.6	1.0

Annual Average	1,182
Wet Season (Apr-Oct) Variability	0.26
Wet Season (Apr-Jun) Variability	0.30

③ VISUALIZATION



BASIN ID : 26

BASIN NAME : St. Battambang River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

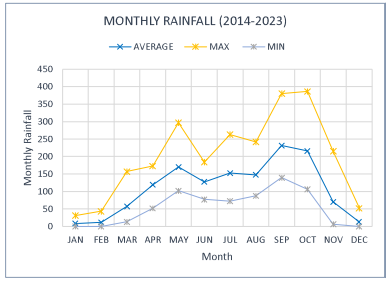
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			24	144	122	172	155	149	140	190	13	7
2015	0	17	19	112	103	162	90	121	189	115	99	1
2016	7	0	18	52	156	162	263	100	250	218	82	52
2017	8	18	157	68	297	142	129	157	221	184	215	10
2018	27	17	33	143	222	100	125	129	166	123	7	45
2019	2	5	95	147	136	89	73	177	233	106	17	0
2020	0	0	14	141	206	184	146	188	224	386	7	2
2021	0	1	31	173	192	77	158	127	380	256	83	1
2022	4	44	140	105	145	101	213	242	240	326	66	9
2023	31	5	44	109	123	89	178	88	273	253	117	4

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	9	12	58	119	170	128	153	148	232	216	71	13
MAX	31	44	157	173	297	184	263	242	380	386	215	52
MIN	0	0	14	52	103	77	73	88	140	106	7	0
STDEV	1.3	1.1	0.9	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.9	1.4

Annual Average	1,328
Wet Season (Apr-Oct) Variability	0.32
Wet Season (Apr-Jun) Variability	0.31

③ VISUALIZATION



BASIN ID : 27

BASIN NAME : St. Moung Russey River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			35	120	164	155	171	138	160	194	16	16
2015	0	6	17	121	122	124	93	143	129	121	131	2
2016	6	0	14	41	113	185	258	114	257	259	76	103
2017	9	23	141	71	296	155	152	228	168	194	193	21
2018	10	11	34	126	180	110	88	103	214	173	16	45
2019	1	2	71	133	199	77	101	143	230	82	15	0
2020	0	0	18	122	150	202	152	180	213	343	6	1
2021	0	2	25	133	163	82	163	164	341	259	137	6
2022	6	34	141	116	130	139	196	259	251	356	68	9
2023	78	0	36	93	137	157	193	130	237	309	133	3

② MONTHLY RAINFALL FROM 2014 - 2023

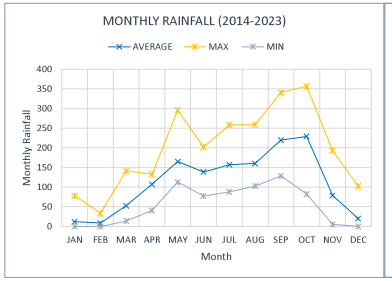
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	12	9	53	107	165	139	157	160	220	229	79	21
MAX	78	34	141	133	296	202	258	259	341	356	193	103
MIN	0	0	14	41	113	77	88	103	129	82	6	0
STDEV	1.9	1.3	0.9	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.8	1.5

Annual Average 1,351

Wet Season (Apr-Oct) Variability 0.30

Wet Season (Apr-Jun) Variability 0.28

③ VISUALIZATION



BASIN ID : 28

BASIN NAME : Pursat River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			34	160	159	170	226	204	205	210	20	16
2015	2	6	27	140	102	182	100	202	180	152	114	7
2016	2	0	10	55	199	231	310	147	335	309	70	126
2017	15	16	147	102	376	177	169	255	213	175	153	24
2018	16	16	66	138	247	139	148	124	270	191	13	44
2019	4	2	53	140	185	145	164	182	266	127	22	0
2020	1	1	28	142	161	211	181	226	299	337	13	5
2021	0	3	27	183	219	99	202	196	362	305	159	5
2022	3	40	133	168	182	198	236	299	324	375	67	14
2023	83	4	46	114	173	182	209	148	301	243	102	3

② MONTHLY RAINFALL FROM 2014 - 2023

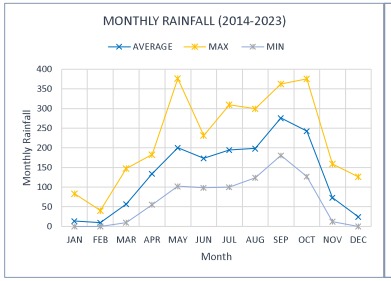
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	14	10	57	134	200	173	194	198	276	243	73	24
MAX	83	40	147	183	376	231	310	299	362	375	159	126
MIN	0	0	10	55	102	99	100	124	180	127	13	0
STDEV	1.8	1.2	0.8	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.7	1.5

Annual Average 1,597

Wet Season (Apr-Oct) Variability 0.27

Wet Season (Apr-Jun) Variability 0.27

③ VISUALIZATION



BASIN ID : 29

BASIN NAME : St. Boribo River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			7	74	96	177	229	119	200	160	27	19
2015	1	2	5	61	87	156	145	183	144	130	96	11
2016	3	2	1	26	160	231	247	135	345	352	135	133
2017	11	16	61	105	330	162	222	175	186	140	130	15
2018	18	3	21	78	173	158	130	120	192	193	22	30
2019	2	2	26	62	156	168	220	152	250	138	19	1
2020	1	1	3	101	138	224	156	183	255	278	23	16
2021	1	9	22	140	163	85	185	224	330	315	225	9
2022	3	22	68	143	220	162	212	272	272	360	85	11
2023	113	5	4	71	159	226	205	166	302	251	157	6

② MONTHLY RAINFALL FROM 2014 - 2023

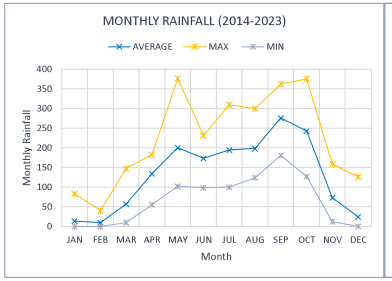
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	17	7	22	86	168	175	195	173	247	232	92	25
MAX	113	22	68	143	330	231	247	272	345	360	225	133
MIN	1	1	1	26	87	85	130	119	144	130	19	1
STDEV	2.0	1.0	1.0	0.4	0.4	0.2	0.2	0.3	0.3	0.4	0.7	1.5

Annual Average 1,439

Wet Season (Apr-Oct) Variability 0.30

Wet Season (Apr-Jun) Variability 0.34

③ VISUALIZATION



BASIN ID : 30

BASIN NAME : St. Koah Poa River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			58	285	258	450	530	471	330	356	46	18
2015	13	18	41	286	112	396	199	375	285	169	94	20
2016	3	0	24	94	377	291	547	312	457	382	49	108
2017	12	48	295	168	435	188	254	292	396	187	107	41
2018	42	34	185	266	463	216	583	350	388	239	27	80
2019	13	8	119	266	158	273	182	439	303	250	59	0
2020	3	5	56	279	211	225	254	285	435	402	27	26
2021	2	2	49	334	377	238	389	256	492	361	154	8
2022	3	103	238	298	296	220	500	418	359	348	169	6
2023	56	13	99	273	197	201	279	172	375	231	104	4

② MONTHLY RAINFALL FROM 2014 - 2023

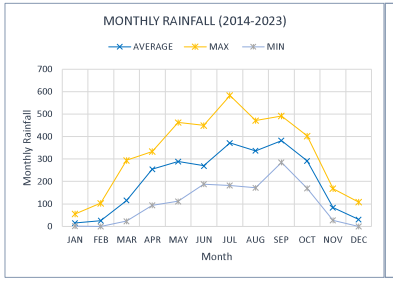
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	16	26	116	255	288	270	372	337	382	293	84	31
MAX	56	103	295	334	463	450	583	471	492	402	169	108
MIN	2	0	24	94	112	188	182	172	285	169	27	0
STDEV	1.1	1.2	0.8	0.3	0.4	0.3	0.4	0.3	0.2	0.3	0.6	1.1

Annual Average 2,470

Wet Season (Apr-Oct) Variability 0.29

Wet Season (Apr-Jun) Variability 0.32

③ VISUALIZATION



BASIN ID : 31

BASIN NAME : St. Me Toek River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			27	193	203	554	655	495	407	320	63	21
2015	8	14	42	170	110	453	224	329	379	152	80	21
2016	7	0	18	73	413	404	664	532	414	318	50	83
2017	9	59	217	148	426	222	330	469	365	166	143	39
2018	43	43	118	225	418	276	614	388	344	219	33	102
2019	8	1	122	186	181	347	176	547	286	165	54	0
2020	5	9	33	283	223	187	227	392	428	447	31	24
2021	2	1	49	256	358	276	487	242	513	482	128	5
2022	7	102	201	191	306	198	683	462	368	349	152	5
2023	25	11	57	214	181	184	270	134	399	237	85	3

② MONTHLY RAINFALL FROM 2014 - 2023

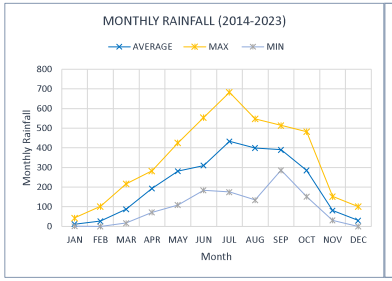
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	13	27	88	194	282	310	433	399	390	285	82	30
MAX	43	102	217	283	426	554	683	547	513	482	152	102
MIN	2	0	18	73	110	184	176	134	286	152	31	0
STDEV	1.0	1.2	0.8	0.3	0.4	0.4	0.5	0.3	0.1	0.4	0.5	1.1

Annual Average 2,533

Wet Season (Apr-Oct) Variability 0.34

Wet Season (Apr-Jun) Variability 0.35

③ VISUALIZATION



BASIN ID : 32

BASIN NAME : Koh Kong River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			70	256	215	396	560	501	379	384	48	12
2015	20	9	38	205	103	482	223	413	278	173	99	23
2016	2	0	15	132	437	273	404	232	441	443	46	123
2017	18	53	232	123	408	160	233	256	385	226	82	45
2018	46	22	158	252	384	208	630	346	401	233	20	63
2019	13	11	77	270	147	266	214	375	285	223	60	1
2020	2	1	54	250	188	223	259	243	437	397	30	28
2021	3	1	49	261	383	219	401	265	475	340	151	12
2022	2	109	213	318	328	209	420	356	357	290	145	6
2023	73	9	61	248	200	220	329	256	388	212	96	5

② MONTHLY RAINFALL FROM 2014 - 2023

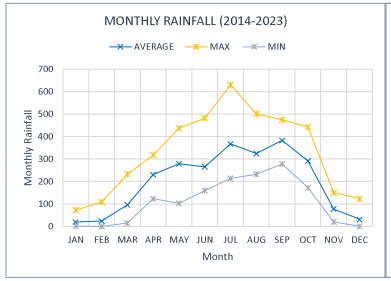
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	20	24	97	232	279	266	367	324	383	292	78	32
MAX	73	109	232	318	437	482	630	501	475	443	151	123
MIN	2	0	15	123	103	160	214	232	278	173	20	1
STDEV	1.2	1.4	0.7	0.3	0.4	0.4	0.4	0.3	0.2	0.3	0.6	1.1

Annual Average 2,393

Wet Season (Apr-Oct) Variability 0.30

Wet Season (Apr-Jun) Variability 0.34

③ VISUALIZATION



BASIN ID : 33

BASIN NAME : Prek Khlang Yai River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			46	221	178	456	535	413	409	334	55	24
2015	17	7	32	163	74	532	312	416	321	149	111	24
2016	3	0	8	95	414	317	445	290	426	516	52	119
2017	19	41	204	101	414	208	301	286	379	268	78	57
2018	51	15	162	166	342	241	628	346	448	245	21	66
2019	19	12	75	191	145	405	257	437	353	197	79	0
2020	4	0	66	257	182	216	262	274	387	454	38	41
2021	3	7	32	211	350	249	407	317	476	358	165	14
2022	3	92	177	245	329	187	480	383	369	276	148	12
2023	80	7	31	191	221	219	364	268	470	256	87	5

② MONTHLY RAINFALL FROM 2014 - 2023

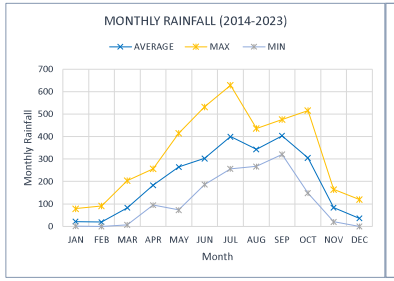
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	22	20	83	184	265	303	399	343	404	305	83	36
MAX	80	92	204	257	414	532	628	437	476	516	165	119
MIN	3	0	8	95	74	187	257	268	321	149	21	0
STDEV	1.1	1.4	0.8	0.3	0.4	0.4	0.3	0.2	0.1	0.4	0.5	1.0

Annual Average **2,449**

Wet Season (Apr-Oct) Variability **0.29**

Wet Season (Apr-Jun) Variability **0.36**

③ VISUALIZATION



BASIN ID : 34

BASIN NAME : Prek Thnot River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			7	116	70	145	192	147	206	220	37	21
2015	2	1	5	67	54	176	116	172	181	131	143	19
2016	1	1	0	29	162	208	216	115	328	521	137	124
2017	13	8	71	117	278	106	188	157	238	170	114	44
2018	26	3	32	42	190	144	111	125	247	239	24	43
2019	8	4	36	75	128	224	157	139	251	145	27	0
2020	1	1	4	131	101	261	184	172	315	381	37	21
2021	1	6	8	129	204	89	174	262	308	349	271	18
2022	3	19	96	165	205	162	226	208	256	315	110	34
2023	78	2	5	134	131	198	203	138	318	250	161	5

② MONTHLY RAINFALL FROM 2014 - 2023

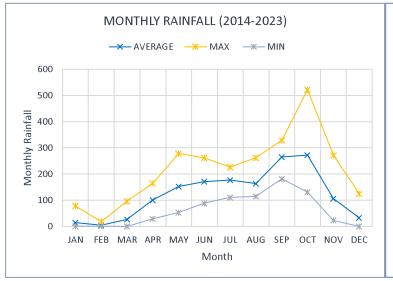
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	15	5	26	101	152	171	177	164	265	272	106	33
MAX	78	19	96	165	278	261	226	262	328	521	271	124
MIN	1	1	0	29	54	89	111	115	181	131	24	0
STDEV	1.6	1.1	1.2	0.4	0.4	0.3	0.2	0.3	0.2	0.4	0.7	1.0

Annual Average **1,487**

Wet Season (Apr-Oct) Variability **0.32**

Wet Season (Apr-Jun) Variability **0.38**

③ VISUALIZATION



BASIN ID : 35

BASIN NAME : Prek Piphot River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			29	178	154	387	597	323	352	268	46	37
2015	11	3	37	205	67	617	260	370	360	121	133	32
2016	3	0	2	80	392	325	436	264	400	558	52	123
2017	17	59	198	83	372	168	317	324	357	266	90	76
2018	51	11	168	159	319	225	633	358	406	222	16	63
2019	28	10	62	166	136	370	260	461	403	193	101	0
2020	1	1	75	241	167	209	306	308	377	514	35	49
2021	2	8	36	213	329	244	380	343	456	396	192	14
2022	4	69	158	255	367	192	448	364	333	273	147	24
2023	92	16	18	154	194	243	439	327	522	298	102	4

② MONTHLY RAINFALL FROM 2014 - 2023

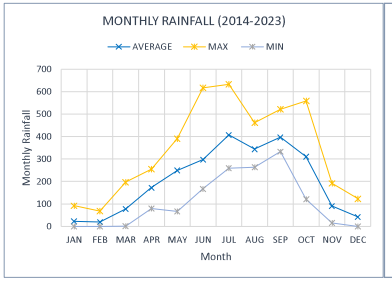
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	23	20	78	173	250	298	408	344	397	311	91	42
MAX	92	69	198	255	392	617	633	461	522	558	192	123
MIN	1	0	2	80	67	168	260	264	333	121	16	0
STDEV	1.2	1.2	0.9	0.3	0.4	0.4	0.3	0.1	0.1	0.4	0.6	0.8

Annual Average **2,435**

Wet Season (Apr-Oct) Variability **0.31**

Wet Season (Apr-Jun) Variability **0.40**

③ VISUALIZATION



BASIN ID : 36

BASIN NAME : Prek Kampong Soam River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			15	177	128	273	458	221	249	246	44	39
2015	3	0	18	190	57	394	186	278	272	128	166	20
2016	4	0	1	41	379	268	241	196	325	583	86	135
2017	13	21	135	89	331	146	279	273	302	220	104	83
2018	50	11	93	98	269	208	421	333	386	241	17	61
2019	20	5	48	81	140	317	196	336	395	165	76	0
2020	1	0	19	268	99	223	283	290	381	486	16	34
2021	1	4	27	161	269	188	267	272	373	400	230	11
2022	2	28	139	245	305	158	341	288	279	289	129	44
2023	108	8	17	126	131	221	321	154	433	335	97	5

② MONTHLY RAINFALL FROM 2014 - 2023

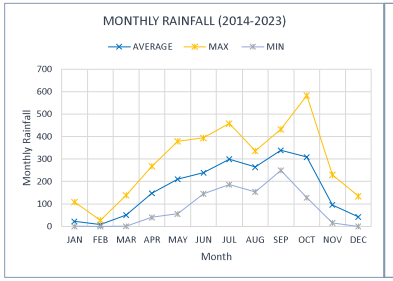
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	22	9	51	147	211	240	299	264	340	309	96	43
MAX	108	28	139	268	379	394	458	336	433	583	230	135
MIN	1	0	1	41	57	146	186	154	249	128	16	0
STDEV	1.5	1.1	1.0	0.5	0.5	0.3	0.3	0.2	0.2	0.4	0.7	0.9

Annual Average **2,032**

Wet Season (Apr-Oct) Variability **0.34**

Wet Season (Apr-Jun) Variability **0.43**

③ VISUALIZATION



BASIN ID : 37

BASIN NAME : St. Taak River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			3	125	150	594	620	440	446	250	94	83
2015	13	10	17	141	97	580	309	475	532	154	140	25
2016	0	1	2	19	352	458	442	464	593	624	81	68
2017	13	124	233	138	435	329	520	647	407	328	71	85
2018	86	6	200	139	257	346	715	515	439	282	48	110
2019	50	4	80	53	257	592	429	656	544	286	127	0
2020	4	1	15	157	154	272	265	443	460	712	75	112
2021	4	33	16	199	576	340	554	543	688	436	229	46
2022	2	51	148	120	278	209	730	535	463	326	159	16
2023	110	13	11	145	292	288	384	240	559	316	76	9

② MONTHLY RAINFALL FROM 2014 - 2023

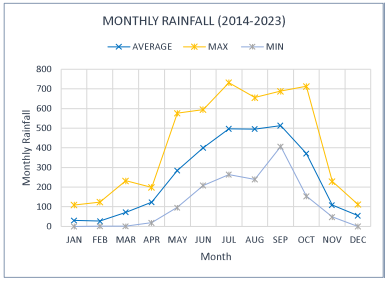
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	31	27	72	124	285	401	497	496	513	371	110	56
MAX	110	124	233	199	576	594	730	656	688	712	229	112
MIN	0	1	2	19	97	209	265	240	407	154	48	0
STDEV	1.2	1.4	1.2	0.4	0.5	0.3	0.3	0.2	0.2	0.4	0.5	0.7

Annual Average **2,983**

Wet Season (Apr-Oct) Variability **0.34**

Wet Season (Apr-Jun) Variability **0.40**

③ VISUALIZATION



BASIN ID : 38

BASIN NAME : Delta (3) River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			2	133	126	162	162	109	133	221	63	50
2015	0	0	0	44	66	154	104	122	228	134	221	23
2016	0	0	0	14	175	200	175	85	290	589	201	97
2017	10	22	14	151	292	142	198	133	202	271	149	117
2018	33	2	22	12	164	180	103	139	227	324	40	89
2019	21	0	9	76	105	201	166	161	225	248	51	0
2020	0	0	2	111	95	220	291	228	430	423	44	38
2021	1	2	1	134	182	83	193	278	220	411	319	38
2022	3	10	115	131	230	111	233	209	261	302	143	71
2023	50	3	0	125	136	190	268	100	327	345	134	10

② MONTHLY RAINFALL FROM 2014 - 2023

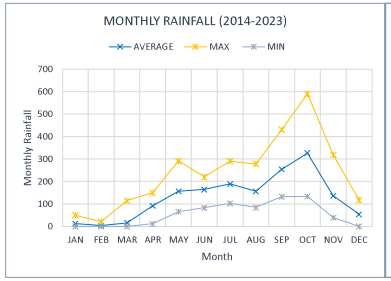
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	13	4	17	93	157	165	189	157	254	327	137	53
MAX	50	22	115	151	292	220	291	278	430	589	319	117
MIN	0	0	0	12	66	83	103	85	133	134	40	0
STDEV	1.3	1.6	2.0	0.5	0.4	0.2	0.3	0.4	0.3	0.4	0.6	0.7

Annual Average **1,566**

Wet Season (Apr-Oct) Variability **0.36**

Wet Season (Apr-Jun) Variability **0.40**

③ VISUALIZATION



BASIN ID : 39

BASIN NAME : Prek Kampong Bay River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

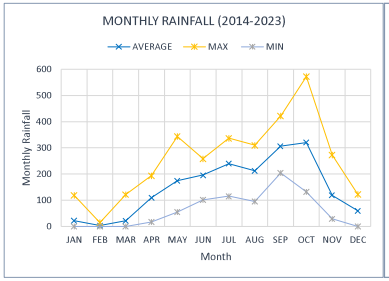
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			2	138	115	235	239	161	204	226	68	94
2015	1	1	2	146	55	247	115	170	332	133	210	7
2016	1	0	0	17	258	232	167	127	251	571	136	105
2017	9	7	23	112	343	137	286	202	204	225	127	123
2018	36	1	35	55	195	201	241	254	307	268	38	103
2019	28	0	21	76	111	258	151	258	393	206	61	0
2020	1	0	1	176	74	211	295	310	372	462	29	56
2021	1	3	11	87	210	102	255	255	300	425	273	30
2022	3	15	122	193	269	133	337	294	276	282	155	64
2023	119	3	1	100	119	199	312	95	422	404	92	11

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	22	3	22	110	175	196	240	213	306	320	119	59
MAX	119	15	122	193	343	258	337	310	422	571	273	123
MIN	1	0	0	17	55	102	115	95	204	133	29	0
STDEV	1.6	1.4	1.6	0.5	0.5	0.3	0.3	0.3	0.2	0.4	0.6	0.7

Annual Average	**1,785**
Wet Season (Apr-Oct) Variability	**0.36**
Wet Season (Apr-Jun) Variability	**0.42**

③ VISUALIZATION



BASIN ID : 40

BASIN NAME : Prek Toek Sap River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

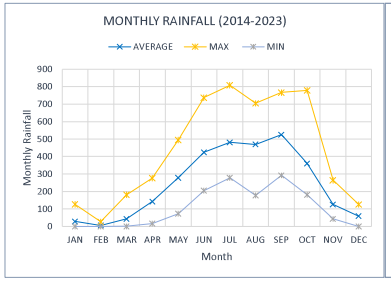
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			20	136	221	737	807	264	522	234	73	52
2015	0	1	16	148	74	639	306	405	472	187	189	8
2016	1	0	1	17	494	485	404	674	597	623	145	108
2017	17	27	91	147	382	494	561	705	293	292	131	112
2018	74	4	71	141	240	381	600	504	480	254	44	102
2019	39	1	39	48	273	543	281	599	766	182	97	1
2020	0	0	2	278	77	264	279	406	521	778	46	126
2021	2	10	11	184	496	234	479	512	556	451	265	29
2022	1	17	182	181	345	206	660	451	440	262	189	47
2023	128	4	4	148	188	261	441	178	606	350	91	17

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	29	7	44	143	279	425	482	470	525	361	127	60
MAX	128	27	182	278	496	737	807	705	766	778	265	126
MIN	0	0	1	17	74	206	279	178	293	182	44	1
STDEV	1.4	1.3	1.2	0.5	0.5	0.4	0.3	0.3	0.2	0.5	0.5	0.8

Annual Average	**2,952**
Wet Season (Apr-Oct) Variability	**0.40**
Wet Season (Apr-Jun) Variability	**0.47**

③ VISUALIZATION



BASIN ID : 41

BASIN NAME : Prek Kampong Smach River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

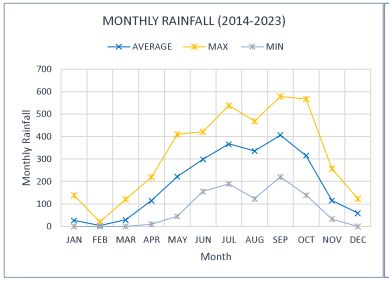
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			11	95	140	422	505	208	320	212	62	66
2015	1	0	7	119	45	409	189	244	432	139	185	4
2016	0	0	0	11	410	315	295	344	338	547	118	116
2017	11	20	52	120	344	376	432	414	220	231	134	124
2018	49	1	63	104	203	271	420	382	375	219	39	102
2019	39	0	26	51	198	399	205	468	579	178	74	0
2020	0	0	2	215	48	228	289	359	410	567	33	92
2021	1	3	7	92	333	170	369	412	473	437	257	21
2022	6	11	122	220	351	156	537	401	358	245	172	53
2023	138	5	2	121	150	247	427	123	562	378	85	14

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	27	4	29	115	222	299	367	336	407	315	116	59
MAX	138	20	122	220	410	422	537	468	579	567	257	124
MIN	0	0	0	11	45	156	189	123	220	139	33	0
STDEV	1.6	1.4	1.3	0.5	0.6	0.3	0.3	0.3	0.3	0.5	0.6	0.8

Annual Average	**2,296**
Wet Season (Apr-Oct) Variability	**0.39**
Wet Season (Apr-Jun) Variability	**0.47**

③ VISUALIZATION



BASIN ID : 42

BASIN NAME : Prek Kampong Trach River Basin

① WEIGHTED AVERAGE MONTHLY RAINFALL

UNIT : mm

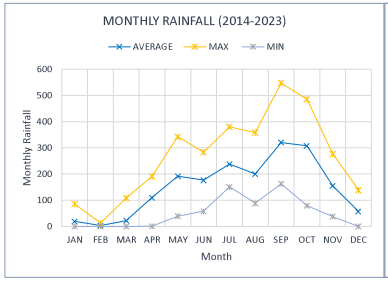
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014			1	146	132	267	182	106	163	197	113	28
2015	1	1	0	37	40	256	154	107	284	80	277	12
2016	0	0	0	1	286	229	151	98	257	485	229	138
2017	20	13	43	188	342	95	267	122	207	256	123	101
2018	24	5	37	45	214	205	199	234	242	286	57	107
2019	42	0	27	81	110	284	191	344	345	305	98	0
2020	1	0	0	160	206	166	300	358	471	403	38	40
2021	1	4	4	110	197	58	262	234	291	421	262	51
2022	0	7	109	191	304	64	295	309	396	298	225	69
2023	86	4	0	145	83	143	379	89	547	343	131	22

② MONTHLY RAINFALL FROM 2014 - 2023

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
AVERAGE	20	4	22	111	191	177	238	200	320	307	155	57
MAX	86	13	109	191	342	284	379	358	547	485	277	138
MIN	0	0	0	1	40	58	151	89	163	80	38	0
STDEV	1.4	1.1	1.5	0.6	0.5	0.5	0.3	0.5	0.4	0.4	0.5	0.8

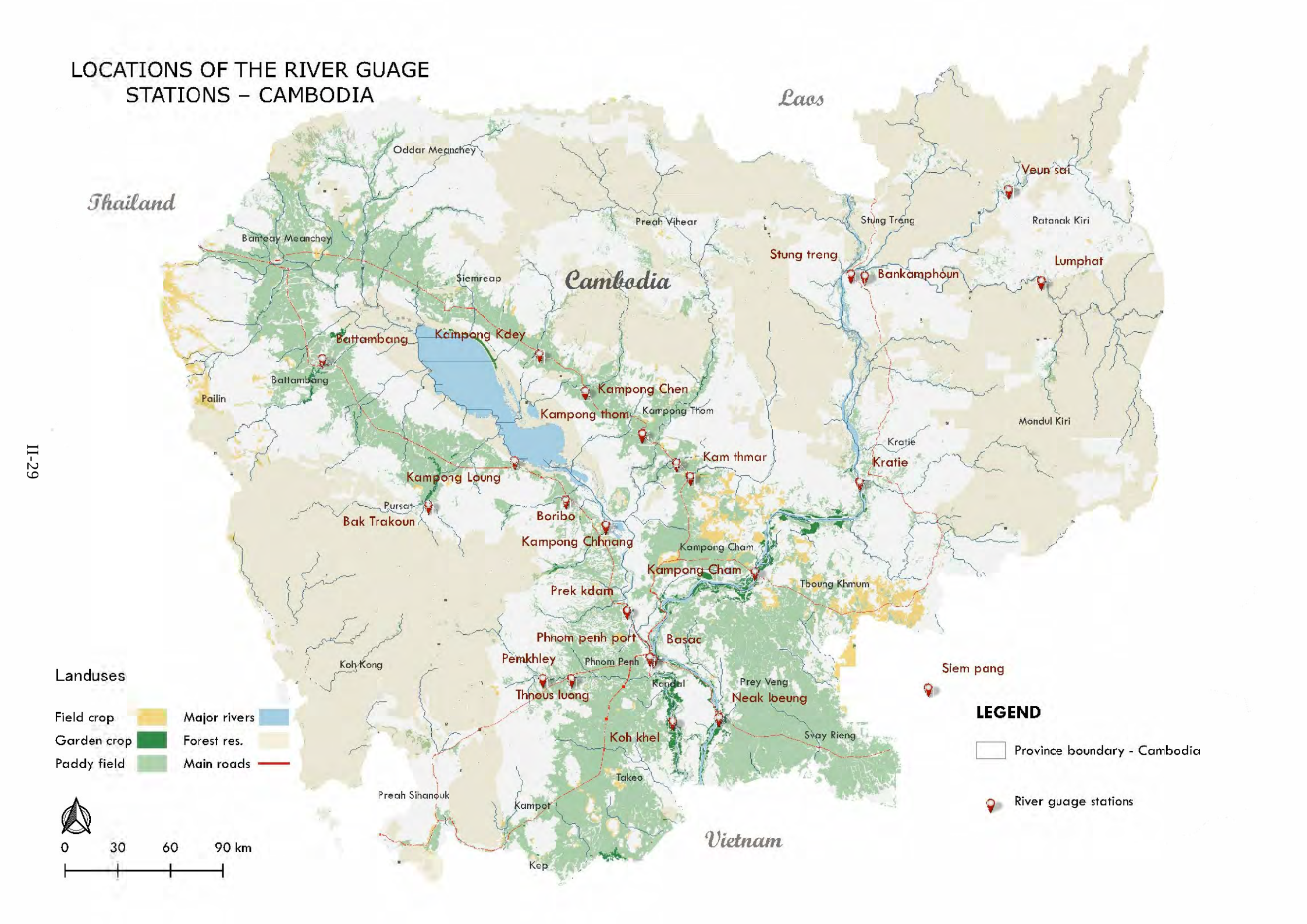
Annual Average	**1,802**
Wet Season (Apr-Oct) Variability	**0.44**
Wet Season (Apr-Jun) Variability	**0.51**

③ VISUALIZATION



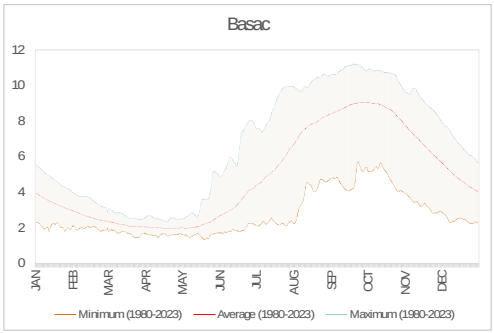
II-2. River Water Level Data

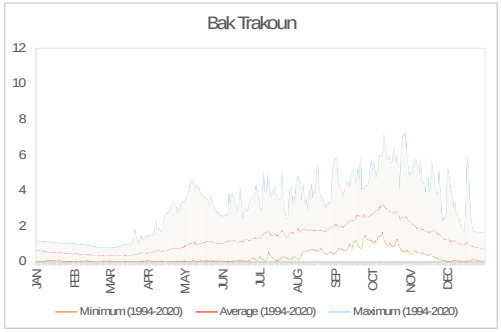
Station ID	Unit ID	Latitude	Longitude	Site Long Name	Agency
BAK_PREA	MHYDROSDR4	13.3124	103.4015	Station Bak Prea-Stung Sangker	MOWRAM
CHAK ANGRAE	CHAKANGRE	11.5178	104.94		MOWRAM
CHAKTOMUK	MHYDRO2	11.5625	104.9353	Station Chaktomuk	MOWRAM
CHIKRENG_KOMPONG_KDEI	MHYDRO13	13.1253	104.3394	Station Chikreng Kompong Kdei-Stung Chikreng	MOWRAM
CHIKRENG_PH_KAMBAUR	MHYDROSDR3	13.4225	104.4073	Station Chikreng Kambaur-Stung Chikreng	MOWRAM
CHINIT	MHYDRO14	12.5015	105.1245	Station Chinit-Stung Chinit	MOWRAM
CHOAM KSAN	MHYDRO22	14.2175	104.9274	Station Choam Ksan-Stung Sen	MOWRAM
CHREY THOM	MHYDRO5	10.9611	105.0781	Station Chrey Thom	MOWRAM
KANGHORT	MHYDRO24	12.8706	103.1282	Station Kanghort-Stung Sangker	MOWRAM
KAOM SOMNOR	KAMSAMNA	10.9569	105.1789		MOWRAM
KDOL LEU	MHYDRORADAR1	13.1825	102.8253	Station Kdol Leu-Stung Mongkol Borei	MOWRAM
KOMPONG CHAM	MHYDRO1	11.9944	105.4686	Station Kompong Cham	MOWRAM
KRALANH KAMPONG THKOV	MHYDRO7	13.6025	103.4136	Station Kralanh Kampong Thkov-Stung Sreng	MOWRAM
KRATIE_H	MHYDRO4	12.7733	105.9636	Station Kratie	MOWRAM
KRONG_PREAH_VIHEA	MHYDRO17	13.8202	104.9809	Station Krong Preah Vihea-Stung Sen	MOWRAM
KULAEN	MHYDRO18	13.8662	104.8248	Station Kulaen - Stung Sen	MOWRAM
NEAK LOEUNG	NEAKLOEUNG	11.2656	105.2838	Station Neak Loeung	MOWRAM
O BEI CHHARN	MHYDROSDR2	13.7661	102.7372	Station O Bei Chorn-Stung Sereisophorn	MOWRAM
O KHAY DORN	MHYDRO11	13.6028	102.6294	Station O Khay Dorn-Stung Sereisophorn	MOWRAM
O SVAY	ANLONGVENG	14.3244	104.2301	Station O Svay	MOWRAM
PH_KHSACH_CHIROS	MHYDRO20	12.6847	104.7787	Station Khsach Chiros-Stung Sen	MOWRAM
PREK CHIK	MHYDRO12	12.6217	103.3878	Station Prek Chik-Stung Moung	MOWRAM
PREN	MHYDRO21	12.8979	105.5799	Station Pren-Stung Chinit	MOWRAM
SAMLOT	MHYDRO15	12.5541	102.8526	Station Samlot-Stung Sangker	MOWRAM
SANDAN	MHYDRORADAR2	13.1056	105.2423	Station Sandan-Stung Sen	MOWRAM
STAUNG	STAUNG01	12.9458	104.5674		MOWRAM
STUNG KRANHOUNG	MHYDRO6	12.7042	102.9556	Station Kranhoung-Stung Sangker	MOWRAM
STUNG KRASANG	MHYDRO9	13.9114	103.4364	Station Krasang-Stung Sreng	MOWRAM
STUNG TRENG	MHYDRO3	13.5181	105.9392	Station Stung Treng	MOWRAM
SVAY CHRUM	MHYDRO8	13.9508	103.0486	Station Svay Chrum-Stung Sereisophorn	MOWRAM
TANG_KRASANG_SANTUK	MHYDRO16	12.5629	105.0478	Station Tang Krasang Santuk-Stung Chinit	MOWRAM

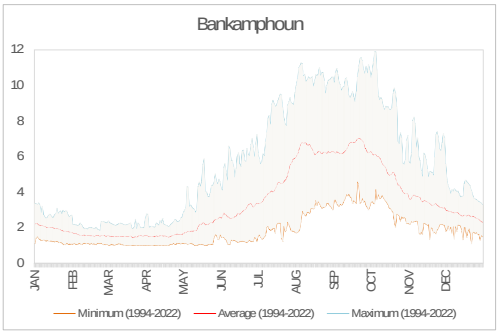

LOCATIONS OF THE RIVER GUAGE STATIONS – CAMBODIA
Laos
Thailand
Cambodia
Vietnam
Oddar Meanchey
Banteay Meanchey
Siemreap
Preah Vihear
Stung Treng
Ratanak Kiri
Mondul Kiri
Kratie
Pailin
Battambang
Kampong Thom
Pursat
Koh Kong
Kandal
Prey Veng
Svay Rieng
Takeo
Kampot
Kep
Preah Sihanouk
Tboung Khmum
Veun sai
Stung treng
Bankamphoun
Lumphat
Siem pang
Kampong Kdey
Kampong Chen
Kampong thom
Kam thmar
Kampong Loung
Bak Trakoun
Boribo
Kampong Chhnang
Kampong Cham
Prek kdam
Phnom penh port
Basac
Pemkhley
Phnom Penh
Thnous luong
Neak loeung
Koh khel
Landuses
Field crop
Garden crop
Paddy field
Major rivers
Forest res.
Main roads
0 30 60 90 km
LEGEND
Province boundary - Cambodia
River guage stations

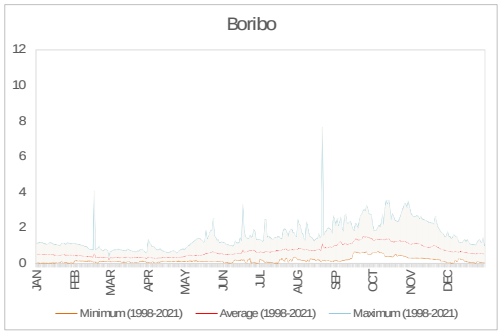
Annual River Guage Fluctuations

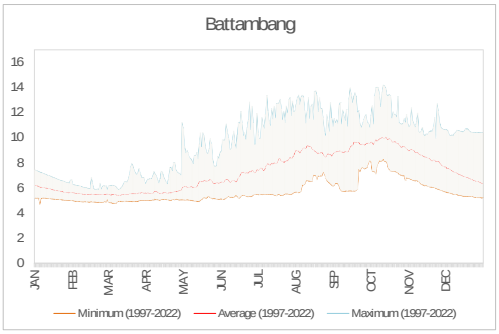
Data Range: Year 1980 to 2023

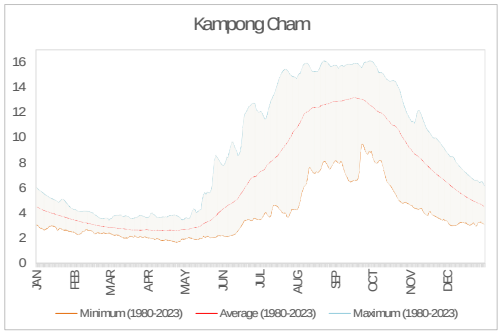


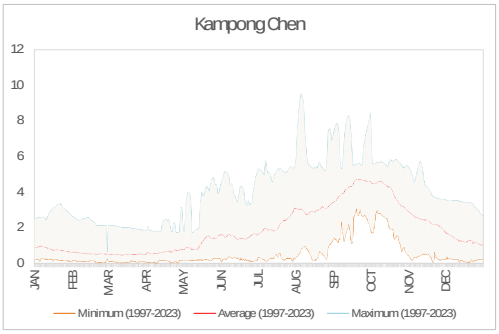


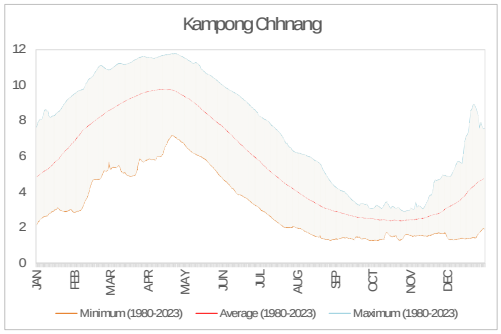


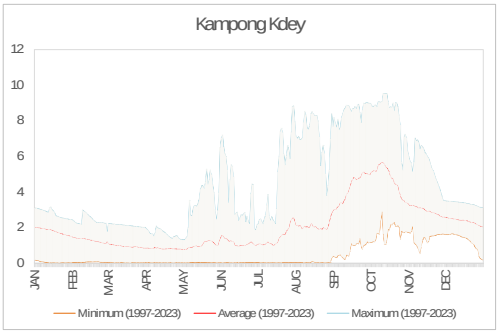


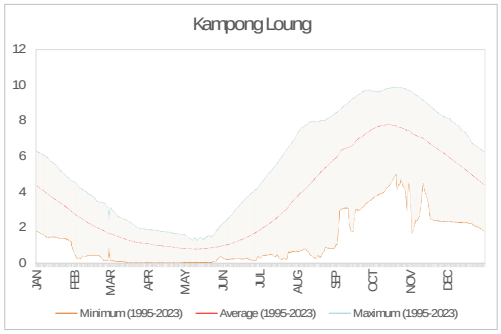


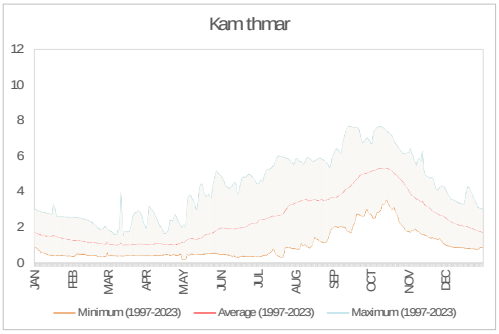








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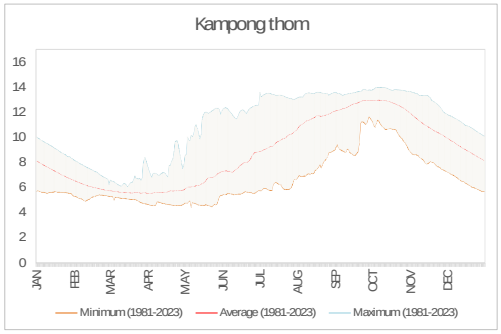
Minimum (1997-2023)
Average (1997-2023)
Maximum (1997-2023)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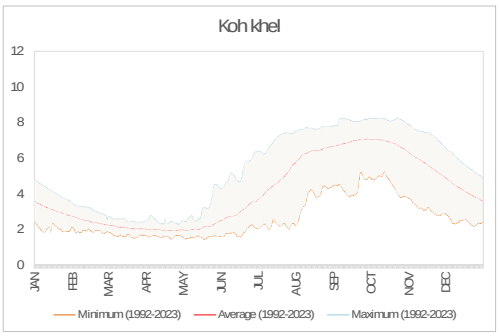
Minimum (1981-2023)
Average (1981-2023)
Maximum (1981-2023)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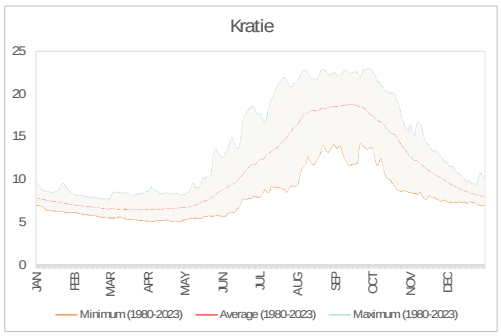
Maximum (1992-2023)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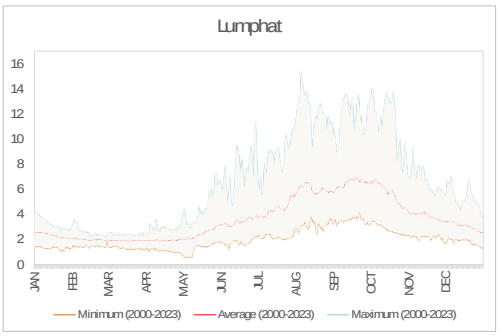
Maximum (1980-2023)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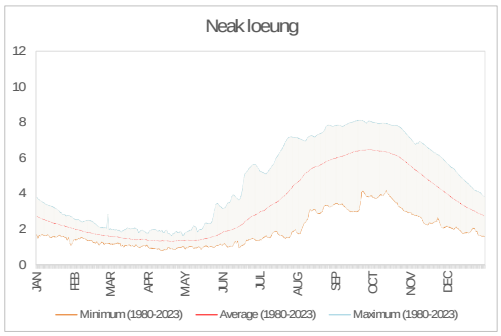
Average (2000-2023)
Maximum (2000-2023)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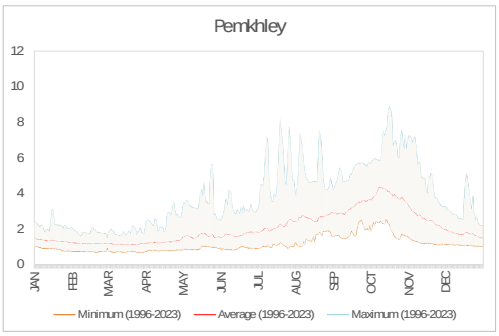
Minimum (1980-2023)
Average (1980-2023)
Maximum (1980-2023)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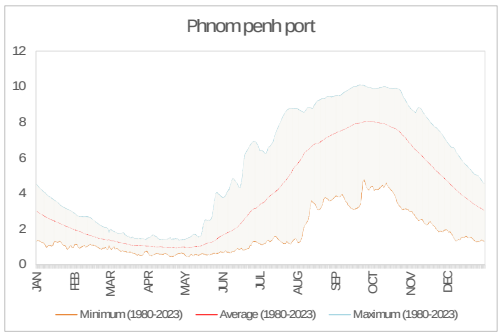
Maximum (1996-2023)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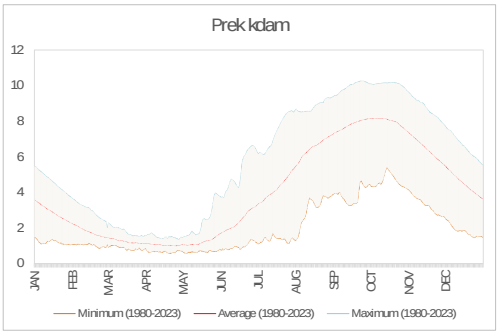
Maximum (1980-2023)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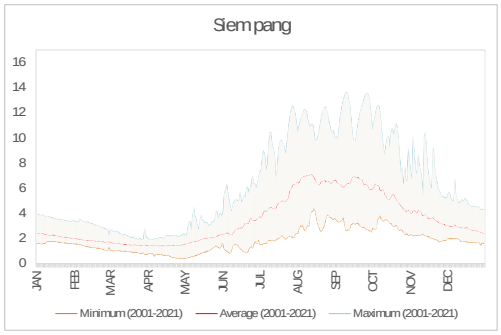
Average (1980-2023)
Maximum (1980-2023)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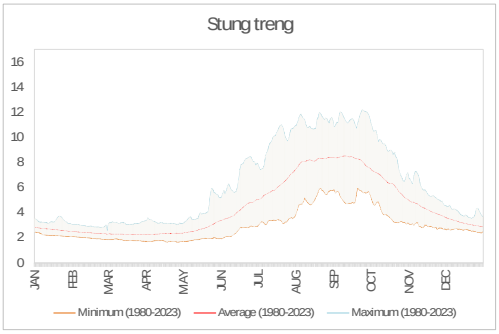
Average (2001-2021)
Maximum (2001-2021)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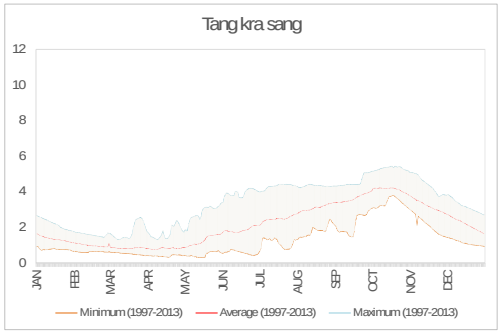
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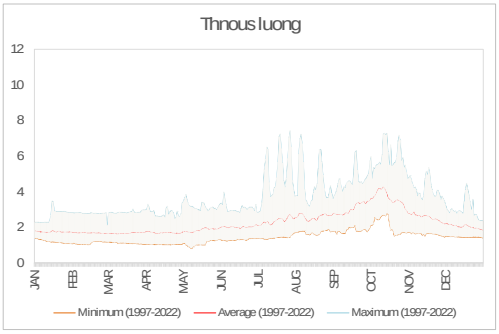
Maximum (1997-2013)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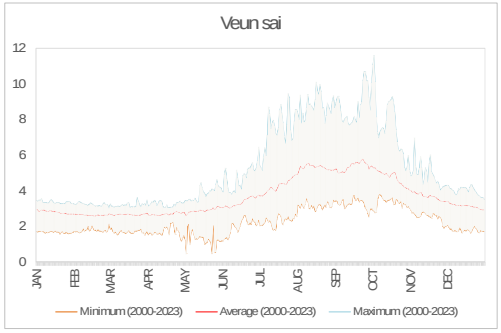
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
Minimum (1997-2022)
Average (1997-2022)
Maximum (1997-2022)


Veun sai
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8
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4
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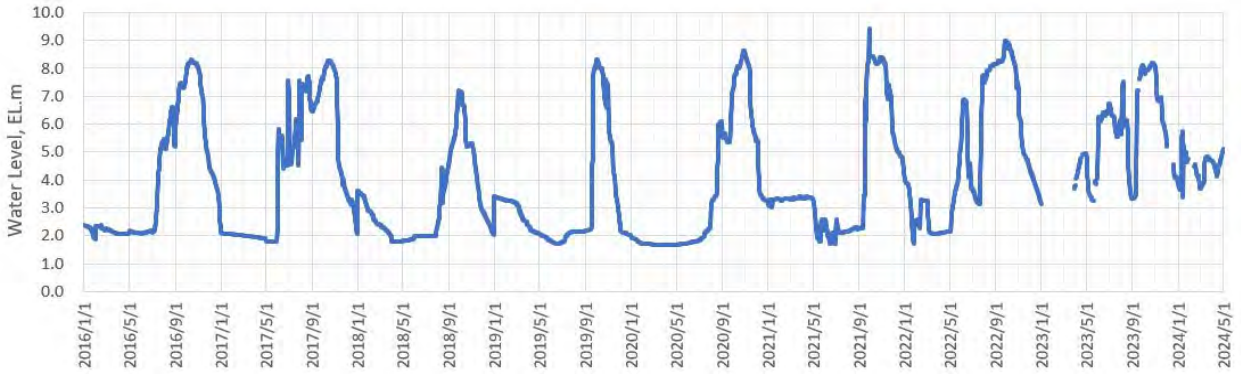
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
Minimum (2000-2023)
Average (2000-2023)
Maximum (2000-2023)

KRALANH KAMPONG THKOV Longitude: 103.4136 Latitude: 13.6025

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	2.21	2.29	2.16	2.08	2.13	2.13	3.72	5.82	7.08	8.17	6.28	3.77
2017	2.08	2.03	1.98	1.93	1.81	5.19	5.54	7.03	7.01	8.08	5.00	3.01
2018	3.32	2.60	2.22	1.80	1.86	2.00	2.02	3.54	5.78	6.03	4.05	2.46
2019	3.33	3.22	2.74	2.18	1.94	1.74	2.01	2.14	4.33	7.70	4.45	2.13
2020	1.83	1.70	1.68	1.66	1.70	1.78	2.07	4.43	5.85	8.13	6.93	3.73
2021	3.27	3.31	3.34	3.36	2.33	2.01	2.18	2.23	5.06	8.31	7.37	4.97
2022	3.06	2.99	2.24	2.12	3.59	5.47	4.40	7.91	8.41	8.28	5.18	3.78
2023	-	-	3.74	-	3.67	6.30	6.08	5.41	6.00	8.04	6.60	4.21
2024	4.54	4.18	4.48	4.58	4.59	3.31	-	-	-	-	-	-
Ave	2.95	2.79	2.73	2.46	2.63	3.33	3.50	4.82	6.19	7.84	5.73	3.51
Min	1.83	1.70	1.68	1.66	1.70	1.74	2.01	2.14	4.33	6.03	4.05	2.13
Max	4.54	4.18	4.48	4.58	4.59	6.30	6.08	7.91	8.41	8.31	7.37	4.97



Appendix III

Result of Field Visit for Main Irrigation Facilities

Contents

APPENDIX III-1

RESULT OF FIELD SURVEY FOR IRRIGATION FACILITY CHECK

TUMNUP LOK AND KHPOB TROBEK

Result of Field Visit for Irrigation Facility Check (Khpob Trobek & Tumnup Lok)

Date: 8 May 2024

Location Map

Facility No. (Beginning of dike)	1
Dike Width (m)	3.0m
Request from PDWRAM	Rehabilitation
Top photo	Middle Photo
	 Reservoir site is Sand soil.

Facility No. (Spillway)	2
Existing Gate	N/A
Inside width	11.20m
Length	8.30m
Height	5.50m
Request from PDWRAM	Rehabilitation
Front side photo	Down Stream Photo
	
Back side photo	Stoplog Photo
	

Facility No. (Intake-1)	3
Existing Gate	N/A
Inside width	11.30m
Length	8.20m
Height	5.40m
Request from PDWRAM	Close the gates
Front side photo	Top Photo
 No need to rehabilitation. To close the Inteke-1.	
Back side photo	Stoplog Photo
	

Facility No. (Intake-2)	4
Existing Gate	N/A
Request from PDWRAM	Rehabilitation
Inside width	12.40m
Length	8.70m
Height	4.70m
Request from PDWRAM	Rehabilitation
Back side photo	Stoplog Photo

Facility No. (Intake-3)	5	
Facility Width (m)	-	
Gate Width (m)	1.60m	2 sets
Gate Height (m)	3.00m	
Flood Height from the bottom	3.30m	
Conduit Type	B1.70mxH4.00m	
Request from PDWRAM	Rehabilitation	
Front side photo	Downstream Photo	

Back side photo	Top Photo

Facility No. (Intake to Sub1-1)	6
Existing Gate	N/A
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Request from PDWRAM	New Construction
Sub1-1 photo	Downstream to upstream side Photo

Facility No. (Intake to Sub1-2)	7
Existing Gate	N/A
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Request from PDWRAM	New Construction
Top photo	Down Stream Photo

Sub1-2 photo	Down to the Upper side, Photo

Facility No. (Bridge-1, Public)	8
Facility Width (m) x Length (m)	W (m) x L (m)
Side photo (Upstream to Downstream)	Under bridge Photo
	
Top photo	Side photo (Downstream to Upstream)
	

Facility No. (Intake to Sub1-3)	9
Existing Gate	N/A
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Request from PDWRAM	New Construction
Top photo	Sub1-3 photo
	

Facility No. (Bridge-2, Private)	10
Facility Width (m) x Length (m)	W (m) x L (m)
Side photo (Upstream to Downstream)	Top Photo
	

Facility No. (Bridge-3, Private)	11
Facility Width (m) x Length (m)	W (m) x L (m)
Side photo (Upstream to Downstream)	Side photo (Downstream to Upstream)
	

Facility No. (Bridge-4, Private)	12
Facility Width (m) x Length (m)	W (m) x L (m)
Side photo (Downstream to Upstream)	
	

Facility No. (Bridge-4, Public)	13
Conduit Type	Box culvert
Facility Width (m) x Length (m) x Height (m)	W 3.90(m) x L 6.00(m) x H 3.70(m)
Inflow conduit Type	Pipe φ0.80 x 2 sets
Upstream side Photo	Inflow Photo
	
Downstrean side photo	Downstream Photo
	

Facility No. (Bridge-5, Public)	14
Conduit Type	Rigid frame culvert
Facility Width (m) x Length (m) x Height (m)	W 8.10(m) x L 4.70(m) x H 2.50(m)
Upstream side Photo	Downstream Photo
	
Upstrean side photo	Photo
	

Facility No. (Siphon)	15
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
River Crest Width	20.00(m)
Upstream photo	Downstream Photo
	
Side view photo	Siphon point Photo
	

Facility No. (Bridge-6, Public)	16
Conduit Type	Pipe Box culvert
Facility Width (m) x Length (m) x Height (m)	W 5.20(m) x L 5.70(m) x H 1.60(m)
Inflow conduit Type	Pipe φ1.00 x 3 sets
Upstream side Photo	Top Photo
	
Upstrean side photo	Downstream Photo
	

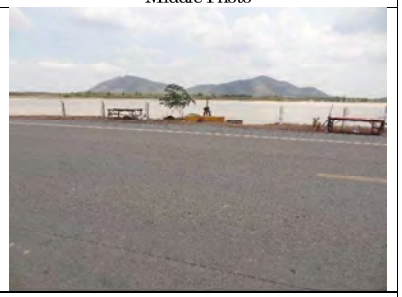
Facility No. (Bridge-7, Public)	17
Conduit Type	Pipe φ0.50 x 1 set
Facility Length (m)	L 12.00(m)
Upstream side Photo	Top Photo
	
Downstrean side photo	Upstream Photo
	

Facility No. (Bridge-8, Public)	17
Conduit Type	Bridge
Facility Width (m) x Length (m) x Height (m)	W 3.00(m) x L 8.50(m) x H 2.30(m)
Upstream side Photo	Top Photo
	
Downstream photo	Downstream side Photo
	

Facility No. (Bridge-9, Private)	18
Conduit Type	Pipe Box culvert
Inflow conduit Type	Pipe φ0.80 x 1 set
Upstream side Photo	Top Photo
	
Downstrean side photo	Downstream Photo
	

Facility No. (Inflow)	19
Conduit Type	Pipe Box culvert
Inflow conduit Type	Pipe φ1.00 x 2 sets
Inflow conduit Hight	1.40(m)
Road Width	4.00(m)
Downstream side Photo	Pipe Photo
	
Downstream side photo	Upstream Photo
	

Facility No. (Bridge-10, Public, National Road 41)	20
Conduit Type	Bridge
Downstream side Photo	Top Photo
	

Facility No. (Maintenance Gate-1 at Khpob Trobek)	21	
Facility Width (m)	2.10(m)	
Gate Width (m)	1.40m	1 set
Gate Height (m)	1.40m	
Conduit Type	Box culvert 2.00(m) x 2.00(m)	
Height from the Bottom to the Road top	4.70(m)	
Road Width (m)	7.50(m)	
Request from PDWRAM	No need rehabilitation	
Top photo	Middle Photo	
		
Inlet photo	Outlet Photo	
		

Facility No. (Spillway of Khpob Trobek)	22	
Facility Width (m)	64.00(m)	
Gate Width (m)	8.00(m)	6 sets
Gate Height (m)	1.80(m)	
Gate Type	Flap Gate + fixed-crest weir	
Height from the Bottom to the Road top	6.00(m)	
Road Width (m)	3.60(m)	
Request from PDWRAM	Rehabilitation	
Top photo	Middle Photo	
		
Middle Photo	Inlet side Photo	
		

Facility No. (Maintenance Gate-2)	23	
Facility Width (m)	2.10(m)	
Gate Width (m)	1.40m	1 set
Gate Height (m)	1.40m	
Conduit Type	Box culvert 2.00(m) x 2.00(m)	
Height from the Bottom to the Road top	4.70(m)	
Road Width (m)	7.50(m)	
Request from PDWRAM	No need rehabilitation	
Top photo	Middle Photo	
		
Inlet photo	Outlet Photo	
		

Facility No. (Intake, Sub1-24)	24	
Facility Width (m)	1.80(m)	
Gate Width (m)	1.35m	1 set
Gate Height (m)	1.35m	
Conduit Type	Box culvert 1.00(m) x 1.00(m)	
Height from the Bottom to the Road top	3.60(m)	
Road Width (m)	7.50(m)	
Request from PDWRAM	No need rehabilitation	
Top photo	Middle Photo	
		
Inlet photo	Outlet Photo	
		

Facility No. (Intake, Main Canal 33)	25	
Facility Width (m)	3.80(m)	
Gate Width (m)	1.45m	2 sets
Gate Height (m)	2.20 m	
Conduit Type	Box culvert B 1.20(m) x 2 nos.	
Height from the Bottom to the Road top	4.80(m)	
Road Width (m)	7.50(m)	
Request from PDWRAM	Need rehabilitation	
Top photo	Inlet Photo	
		

Facility No. (Intake, Koh Kaek Canal)	26	
Facility Width (m)	4.40(m)	
Gate Width (m)	1.80(m)	2 sets
Gate Height (m)	4.15(m)	
Conduit Type	Box culvert B 4.00(m) x H 2.00(m)	
Height from the Bottom to the Road top	4.15(m)	
Road Width (m)	7.50(m)	
Request from PDWRAM	No need rehabilitation	
Top photo	Middle Photo	
		
Inlet photo	Outlet Photo	
		

Facility No. (Bridge-11, Private)	27
Conduit Type	Steal Bridge
Facility Width (m) x Length (m) x Height (m)	W 3.30(m) x L 12.00(m) x H 2.70(m)
Top Photo	
	

Facility No. (Bridge-12, Private)	28
Conduit Type	Wooden Bridge
Facility Width (m) x Length (m) x Height (m)	W 2.00(m) x L 12.00(m) x H 2.60(m)
Top Photo	
	

Facility No. (Bridge-13, Private)	29
Conduit Type	Box culvert
Facility Width (m) x Length (m) x Height (m)	W 6.00(m) x L 12.40(m) x H 2.90(m)
Top Photo	Upstream side Photo
	

Facility No. (Intake, Canal 3L)	30
Existing Gate	N/A
Conduit Type	Pipe φ0.20m
Canal Bed Conditions	Silty sand deposits
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Inlet photo
	
Inlet photo	Outlet Photo
	

Facility No. (Check gate, Intake)	31	
Facility Width (m)	4.70(m)	
Gate Width (m)	1.75(m)	2 sets
Gate Height (m)	2.00(m)	
Gate Type	Stop-log	
Height from the Bottom to the Road top	3.70(m)	
Road Width (m)	3.60(m)	
Top photo	Inlet side Photo	
		
Middle Photo	Outlet side Photo	
		

Facility No. (Check gate, Intake)	32	
Facility Width (m)	4.70(m)	
Gate Width (m)	1.70(m)	2 sets
Gate Height (m)	1.40(m)	
Gate Type	Stop-log	
Height from the Bottom to the Road top	3.20(m)	
Road Width (m)	3.90(m)	
Inlet size	Pipe φ 0.90(m)	
Top photo	Check gate upstream side Photo	
		
Inlet Photo	Check gate downstream side Photo	
		

Facility No. (Intake, Canal 23)	33	
Facility Width (m)	4.80(m)	
Gate Width (m)	1.80(m)	2 sets
Gate Height (m)	1.60(m)	
Gate Type	N/A	
Height from the Bottom to the Road top	3.20(m)	
Road Width (m)	3.90(m)	
Inlet size	Pipe φ 1.00(m)	
Top photo	Check gate upstream side Photo	
		
Inlet Photo	Outlet Photo	
		

Facility No. (Intake, Canal 24)	34
Facility Condition	Under construction
Top photo	Outlet Photo
	
Outlet Photo	Outlet Photo
	

Facility No. (Intake, Canal 25)	35
Facility Condition	Under construction
Top photo	Inlet Photo
	
Outlet downstream Photo	Outlet Photo
	

Facility No. (Check gate, Intake)	36	
Facility Width (m)	4.00(m)	
Gate Width (m)	1.50(m)	2 sets
Gate Height (m)	0.90(m)	
Top photo	Check gate upstream side Photo	
		
Outlet Photo		
		

Facility No.	37
Upstream side Photo	Main canal upstream Photo
	

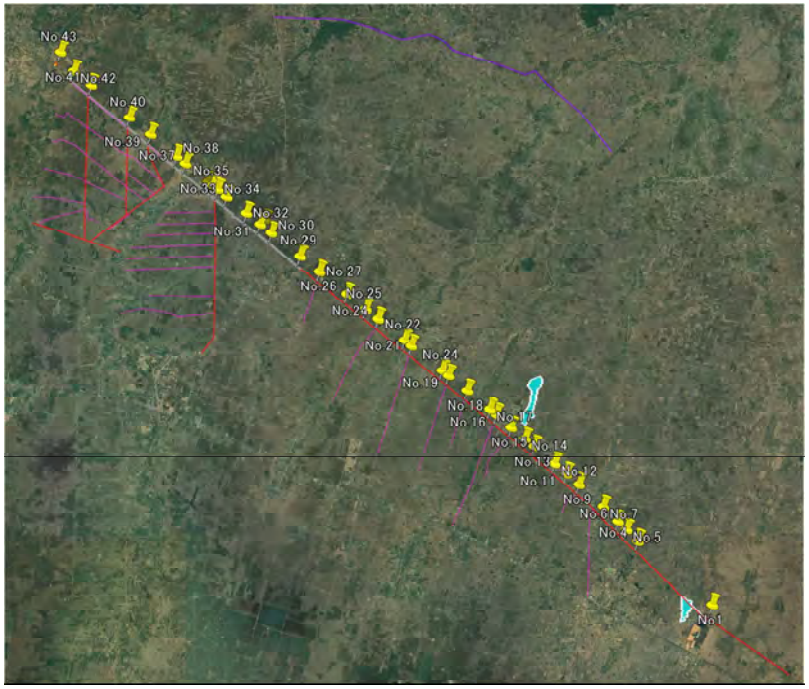
APPENDIX III-2

RESULT OF FIELD SURVEY FOR IRRIGATION FACILITY CHECK
PLAING AND SPEAN SRAENG

Result of Field Visit for Irrigation Facility Check (Plaing and Spean Sraeng)

Date: 1 May 2024

Location Map



Intake No.	1
Gate Width (m)	None
Gate Height (m)	None
Conduit Type	Pipe φ1.0m ×2
Height from the Bottom to Road top	2.2m
Inlet Photo	Outlet Photo
-	

Intake No.	2	
Facility Width (m)	1.65m	
Gate Width (m)	1.2m	1 sets
Gate Height (m)	1.5m	
Flood Height from the bottom	1.2m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	5.0m	
Inlet photo	Outlet Photo	
		

Intake No.	3	
Facility Width (m)	3.5m	
Gate Width (m)	1.5m	2 sets
Gate Height (m)	2.0m	
Flood Height from the bottom	1.2m	
Conduit Type	Culvert × 1	
Height from the Bottom to Road top	-	
Road Width (m)	7.0m	
Inlet photo	Outlet Photo	
		

Intake No.	4	
Facility Width (m)	-	
Gate Width (m)	-	-
Gate Height (m)	-	
Flood Height from the bottom	0.9m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	3.15m	
Road Width (m)	-	
Inlet photo	Outlet Photo	
		

Intake No.	5	
Facility Width (m)	1.65m	
Gate Width (m)	1.2m	1 set
Gate Height (m)	1.5m	
Flood Height from the bottom	1.0m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	5m	
Inlet photo	Outlet Photo	
		

Intake No.	6	
Facility Width (m)	1.7	
Gate Width (m)	1.25m	1 set
Gate Height (m)	1.5m	
Flood Height from the bottom	1.4m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	5m	
Inlet photo	Outlet Photo	
		

Intake No.	7	
Facility Width (m)	-	
Gate Width (m)	-	-
Gate Height (m)	-	
Flood Height from the bottom	-	
Conduit Type	Pipe φ1.0m ×2	
Height from the Bottom to Road top	-	
Road Width (m)	-	
Inlet photo	Outlet Photo	
		

Intake No.	8	
Facility Width (m)	-	
Gate Width (m)	-	-
Gate Height (m)	-	
Flood Height from the bottom	-	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	2.15m	
Road Width (m)	-	
Inlet photo	Outlet Photo	
		

Intake No.	9	
Facility Width (m)	1.6m	
Gate Width (m)	1.2m	1 set
Gate Height (m)	1.5m	
Flood Height from the bottom	1.4m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	-	
Inlet photo	Outlet Photo	
		

Intake No.	10	
Facility Width (m)	1.6m	
Gate Width (m)	1.2m	1 set
Gate Height (m)	1.5m	
Flood Height from the bottom	1.6m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	6.0m	
Inlet photo	Outlet Photo	
		

Road Collapsed portion	-	
Facility Width (m)-	-	
Gate Width (m)	-	-
Gate Height (m)	-	
Flood Height from the bottom	-	
Depth of collapsed portion (m)	2.25m	
Temporary bridge length (m)	8.7m	
Temporary bridge Width (m)	2.9m	
Photo	Photo	
	-	

Intake No.	11	
Facility Width (m)	2.5 m	
Gate Width (m)	1.5m	2 sets
Gate Height (m)	0.9m	
Flood Height from the bottom	0.4m	
Conduit Type	Culvert × 2	
Separator width	0.3m	
Height from the Bottom to Road top	-	
Road Width (m)	5.0 m	
Inlet photo	Outlet Photo	
 Built 2022.Dec		

Intake No.	12	
Facility Width (m)	1.6m	
Gate Width (m)	1.2m	1 set
Gate Height (m)	1.5m	
Flood Height from the bottom	1.6m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	5.0 m	
Inlet photo	Outlet Photo	
-		

17:17

Intake No.	13	
Facility Width (m)	2.5 m	
Gate Width (m)	1.2m	1 set
Gate Height (m)	1.5m	
Flood Height from the bottom	1.9m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	6.0 m	
Inlet photo	Outlet Photo	
		

Intake No.	14	
Facility Width (m)	Water lifting by pump	
Gate Width (m)		
Gate Height (m)		
Flood Height from the bottom		
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top		
Road Width (m)	5.0m	
Inlet photo	Outlet Photo	
		

Intake No.	15	
Facility Width (m)	2.5 m	
Gate Width (m)	2.1m	2 set
Gate Height (m)	3.0m	
Flood Height from the bottom	1.5m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	5.5 m	
Inlet photo	Outlet Photo	
		

Intake No.	16	
Facility Width (m)	2.6 m	
Gate Width (m)	2.1m	1 set
Gate Height (m)	3.0m	
Flood Height from the bottom	2.0m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	6.0 m	
Inlet photo	Outlet Photo	

Intake No.	17	
Facility Width (m)	6.0 m	
Gate Width (m)	1.7m	3 set
Gate Height (m)	2.8m	
Flood Height from the bottom	6.0m	
Conduit Type	Culvert × 3	
Height from the Bottom to Road top	-	
Road Width (m)	6.0 m	
Inlet photo	Outlet Photo	

Intake No.	18	
Facility Width (m)	1.65 m	
Gate Width (m)	1.2m	1 set
Gate Height (m)	1.5m	
Flood Height from the bottom	0.9m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	4.5 m	
Inlet photo	Outlet Photo	

Intake No.	19	
Facility Width (m)	2.5 m	
Gate Width (m)	2.1m	1 set
Gate Height (m)	3.0m	
Flood Height from the bottom	1.5m	
Conduit Type	-	
Height from the Bottom to Road top	-	
Road Width (m)	4.0 m	
Inlet photo	Outlet Photo	

Intake No.	20	
Facility Width (m)	1.65 m	
Gate Width (m)	1.15m	1 set
Gate Height (m)	1.5m	
Flood Height from the bottom	1.25m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	5.5 m	
Inlet photo	Outlet Photo	
		

Intake No.	21	
Facility Width (m)	4.9 m	
Gate Width (m)	1.2m	2 sets
Gate Height (m)	3.5m	
Flood Height from the bottom	4.9m	
Conduit Type	-	
Height from the Bottom to Road top	-	
Road Width (m)	6.0 m	
Inlet photo	Outlet Photo	
		

Intake No.	22	
Facility Width (m)	-	
Gate Width (m)	1.15m	1 set
Gate Height (m)	1.5m	
Flood Height from the bottom	0.4m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	7.5 m	
Inlet photo	Outlet Photo	
		

Intake No.	23	
Facility Width (m)	-	
Gate Width (m)	1.15m	2 set
Gate Height (m)	1.5m	
Flood Height from the bottom	2.3m	
Conduit Type	-	
Height from the Bottom to Road top	-	
Road Width (m)	5.5 m	
Inlet photo	Outlet Photo	
		

Intake No.	24	
Facility Width (m)	2.5 m	
Gate Width (m)	2.7m	1 set
Gate Height (m)	3.0m	
Flood Height from the bottom	1.7m	
Conduit Type		
Height from the Bottom to Road top	-	
Road Width (m)	5.5 m	
Inlet photo	Outlet Photo	

Intake No.	25	
Facility Width (m)	-	
Gate Width (m)	1.15m	1 set
Gate Height (m)	1.5m	
Flood Height from the bottom	2.0m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	5.0 m	
Inlet photo	Outlet Photo	

Intake No.	26	
Facility Width (m)	-	
Gate Width (m)	1.2m	1 set
Gate Height (m)	1.5m	
Flood Height from the bottom	-	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Road Width (m)	5.5 m	
Height of embankment (m)	1.6m	
Inlet photo	Outlet Photo	

Intake No.	27	
Facility Width (m)	4.4 m	
Gate Width (m)	1.15m	3 sets
Gate Height (m)	1.55m	
Flood Height from the bottom	-	
Conduit Type		
Width of internal separator (m)	0.2m × 2	
Height from the Bottom to Road top	-	
Road Width (m)	5.0 m	
Inlet photo	Outlet Photo	

Intake No.	28	
Facility Width (m)	-	
Gate Width (m)	1.15m	1 set
Gate Height (m)	1.5m	
Flood Height from the bottom	1.15m	
Conduit Type	Pipe φ1.0m×1	
Height from the Bottom to Road top	-	
Road Width (m)	5.5 m	
Inlet photo	Outlet Photo	
 		

Intake No.	29	
Facility Width (m)	3.6 m	
Gate Width (m)	1.15m	2 sets
Gate Height (m)	1.18m	
Flood Height from the bottom	-	
Conduit Type	-	
Width of internal separator (m)	0.5m	
Height from the Bottom to Road top	-	
Road Width (m)	5.5 m	
Inlet photo	Outlet Photo	
	-	

Intake No. (Demarcation point)	30	
Facility Width (m)	3.2 m	
Gate Width (m)	1.15m	2 sets
Gate Height (m)	1.7m	
Flood Height from the bottom	0.4m	
Conduit Type	-	
Width of internal separator (m)	0.3m	
Height from the Bottom to Road top	-	
Road Width (m)	-	
Inlet photo	Outlet Photo	
		

Intake No.	31	
Facility Width (m)	3.9 m	
Gate Width (m)	1.6m	2 sets
Gate Height (m)	2.8m	
Flood Height from the bottom	2.4m	
Conduit Type		
Height from the Bottom to Road top	-	
Road Width (m)	-	
Inlet photo	Outlet Photo	
		

Intake No.	32	
Facility Width (m)	2.5 m	
Gate Width (m)	1.2m	4 sets
Gate Height (m)	2.2m	
Flood Height from the bottom	3.2m	
Conduit Type	Pipe φ1.0m ×1	
Width of internal separator (m)	0.5m × 3	
Height from the Bottom to Road top	-	
Bridge length (m)	7m	
Inlet photo	Outlet Photo	
		

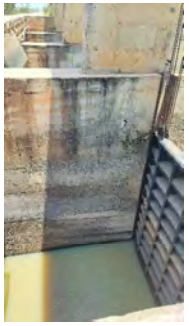
Intake No.	33	
Facility Width (m)	-	
Gate Width (m)	1.1m	3 set
Gate Height (m)	2.3m	
Flood Height from the bottom	3.3m	
Conduit Type		
Height from the Bottom to Road top	-	
Road Width (m)	6.0 m	
Bridge length (m)	10m	
Inlet photo	Outlet Photo	
	-	

Intake No.	34	
Facility Width (m)	-	
Gate Width (m)	1.54m	3 sets
Gate Height (m)	3.0m	
Flood Height from the bottom	3.65m	
Conduit Type	-	
Height from the Bottom to Road top	-	
Road Width (m)	7.5m	
Bridge length (m)	8.5m	
Inlet photo	Outlet Photo	
		

Intake No.	35	
Facility Width (m)	-	
Gate Width (m)	1.2m	1 set
Gate Height (m)	1.4m	
Flood Height from the bottom	2.4m	
Conduit Type	-	
Height from the Bottom to Road top	-	
Road Width (m)	5.0 m	
Height of embankment (m)	3.8m	
Inlet photo	Outlet Photo	
	-	

Intake No.	36	
Facility Width (m)	8.0 m	
Gate Width (m)	2.8m	3 sets
Gate Height (m)	3.2m	
Flood Height from the bottom	0.4m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Bridge height (m)	4.9m	
Bridge length (m)	9.0m	
Road Width (m)	-	
Inlet photo	Outlet Photo	

Intake No. (ADB 2015)	37	
Facility Width (m)	28.5 m	
Gate Width (m)	6.4m	4 sets
Gate Height (m)	5.5m	
Flood Height from the bottom	5.9m	
Conduit Type	-	
Height from the Bottom to Road top	-	
Road Width (m)	-	
Inlet photo	Outlet Photo	



Intake No. (Labyrinth weir)	38	
Facility Width (m)	14.6	
Gate Width (m)	-	-
Gate Height (m)	-	
Internal Height (m)	4.5	
Internal length (m)	14.0	
Height from the Bottom to Road top	-	
Road Width (m)	-	
Inlet photo	Outlet Photo	

Intake No.	39	
Facility Width (m)	2.5 m	
Gate Width (m)	1.2m	6 sets
Gate Height (m)	1.24m	
Flood Height from the bottom	0.4m	
Conduit Type	Pipe φ1.0m ×1	
Height from the Bottom to Road top	-	
Gate portion width (m)	9.6 m	
Bridge height (m)	4.7m	
Inlet photo	Outlet Photo	

Intake No.(Bride)	40
Bridge length (m)	15.0
Bridge height (m)	5.6
River bed width (m)	9.5
Flood Height from the bottom	2.5
Road Width (m)	-
Inlet photo	Outlet Photo
	

Intake No.(Bride)	41
Bridge length (m)	22m
Bridge height (m)	5.0m
River bed width (m)	16.2
Flood Height from the bottom	2.6
Road Width (m)	-
Inlet photo	Outlet Photo
	

Intake No.(Bride)	42
Bridge length (m)	24.0
Bridge height (m)	6.8
River bed width (m)	16.0
Flood Height from the bottom	2.5
Road Width (m)	5.15
Inlet photo	Outlet Photo
	

Intake No.(Bride)	43
Bridge length (m)	
Bridge height (m)	
River bed width (m)	
Flood Height from the bottom	
Road Width (m)	-
Inlet photo	Outlet Photo
	

APPENDIX III-3

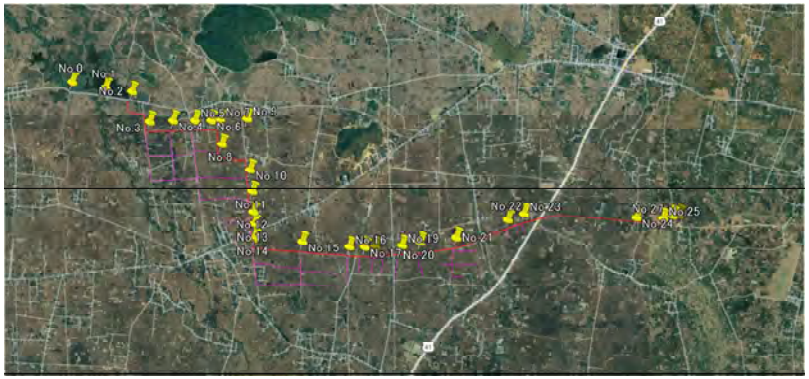
RESULT OF FIELD SURVEY FOR MAIN IRRIGATION FACILITIES

KHPOB KROUS

Result of Field Visit for Irrigation Facility Check (Khopb Krous)

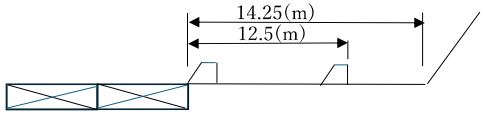
Date: 6 May 2024

Location Map



Facility No. (Spillway-Flap Gate)	1	
Facility Width (m)	43.0m	
Gate Width (m)	8.0m	4 sets
Gate Height (m)	2.2m	
Side (m)	11.0m x 2 spans	4 spans
Middle (m)	10.45m x 2 spans	
Flood Height from the bottom	- m	
Conduit Type	Open	
Height from the Bottom to the Road top	7.3m	
Road Width (m)	3.6m	
Dike Height (m)	3.6m	
Top photo	Middle Photo	

Inlet photo	Outlet Photo



Facility No. (Intake-Slide Gate)	2	
Facility Width (m)	5.9m	
Gate Width (m)	1.5m	3 sets
Gate Height (m)	3.0m	
Flood Height from the bottom	-m	
Conduit Type	Open	
Height from the Bottom to the Road top	4.55m	
Road Width (m) x Length (m)	W3.0m x L5.8m	
Top photo	Middle Photo	

Inlet photo	Outlet Photo

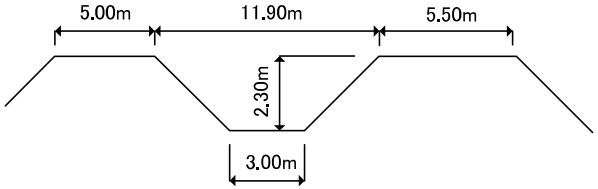


Figure 1 Main canal shape - 1

Facility No. (Intake to Sub1-1)	3
Existing Gate	N/A
Conduit Type	New Construction
Canal Bed Conditions	Silty sand deposit and exuberant grass
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Upper Stream photo	Down Stream Photo
	
Sub1-No.1 photo	Down to Upper side Photo
	

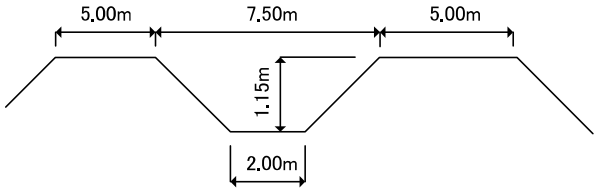


Figure 2 Main canal shape - 2

Facility No. (Sub1-2)	4
Existing Gate	N/A
Conduit Type	Pipe φ0.60m
Canal Bed Conditions	Silty sand deposit and exuberant grass
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Inlet photo
	
Inlet photo	Outlet Photo
	

Facility No. (Bridge)	5
Existing Gate	N/A
Conduit Type	Pipe φ1.00m
Canal Bed Conditions	Silty sand deposit and exuberant grass
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Middle Photo
Inlet photo	Outlet Photo
	

Facility No. (Crossing)	6
Existing Gate	N/A
Conduit Type	Pipe φ1.00m
Canal Bed Conditions	Sand deposit and exuberant grass
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Middle Photo
Inlet photo	Outlet Photo
	

Facility No. (Preparatory Survey 2012 – Main canal)	7	
Facility Width (m)	-	
Gate Width (m)	1.20m	1 set
Gate Height (m)	1.20m	
Flood Height from the bottom	-	
Conduit Type	-	
Height from the Bottom to the Road top	Pipe φ1.00m	
Road Width (m) x Length (m)	-	
Top photo	Middle Photo	
		
Inlet photo	Outlet Photo	
		

Facility No. (PS 2012 – Existing end of Main canal)	8
Existing Gate	N/A
Conduit Type	New Construction
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Endpoint Photo
	

Facility No. (Proposed by MOWRAM in 2012, Original)	9	
Facility Width (m)	-	
Gate Width (m)	1.20m	3 sets
Gate Height (m)	1.20m	
Flood Height from the bottom	-	
Conduit Type	Pipe φ1.00m	
Height from the Bottom to the Road top	2.20m	
Road Width (m) x Length (m)	-	
Top photo	Middle Photo	
		
Inlet photo	Outlet Photo	
		

Facility No. (Sub1-5, New construction)	10
Existing Gate	N/A
Conduit Type	New Construction
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Middle Photo
	

Facility No. (Sub1-6, New construction)	11
Existing Gate	N/A
Conduit Type	N/A
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo(PS2012)	Top photo(Recomended2024)
	
Inlet photo	Outlet Photo

Facility No. (Sub1-7, New construction)	12
Existing Gate	N/A
Conduit Type	New Construction
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo(PS2012)	Top photo(Recomended2024)
	
Inlet photo	Main Canal Photo
	

Facility No. (Sub1-8)	13
Existing Gate	N/A
Conduit Type	New Construction
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo(PS2012)	Top photo(Recomended2024)
	
Downstream photo	Outlet Photo
	

Facility No. (Sub1-8)	14
Existing Gate	N/A
Conduit Type	New Construction
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Middle Photo
	
Inlet photo	Outlet Photo
	

Facility No. (Sub1-9)	15
Existing Gate	N/A
Conduit Type	New Construction
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Inlet photo	Outlet Photo
	

Facility No. (Sub1-10)	16
Existing Gate	N/A
Conduit Type	Box-culvert
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Sub1-10 Photo
	
Inlet photo	Outlet Photo
	

Facility No. (Sub1-11, New construction)	17
Existing Gate	N/A
Conduit Type	New Construction
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo(PS2012)	Top photo(Recomended2024)
	

Facility No. (Sub1-12, New construction)	18
Existing Gate	N/A
Conduit Type	New Construction
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo(PS2012)	Top photo(Recomended2024)
	

Facility No. (Sub1-13, New construction)	19
Existing Gate	N/A
Conduit Type	New Construction
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo(PS2012)	Top photo(Recomended2024)
	
Inlet photo	Inlet Photo
	

Facility No. (Sub1-14, New construction)	20
Existing Gate	N/A
Conduit Type	New Construction
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Sub1-14 Downstream Photo
	

Facility No. (Sub1-15, New construction)	21
Existing Gate	N/A
Conduit Type	New Construction
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Sub1-15 Downstream Photo
	

Facility No. (Sub1-16, New construction)	22
Existing Gate	N/A
Conduit Type	Pipe φ 1.00m x 2
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Inlet Photo
	
Inlet photo	Sub1-16 Downstream Photo
	

Facility No. (Sub1-18, New construction)	23
Existing Gate	N/A
Conduit Type	New Construction
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Sub1-17 Downstream Photo
	

Facility No. (Inlet)	24
Existing Gate	N/A
Conduit Type	Pipe φ 0.75m
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Middle Photo
	
Inlet photo	Outlet Photo
	

Facility No. (Inlet, 2023)	25
Existing Gate	N/A
Conduit Type	Pipe φ 0.75m
Canal Bed Conditions	Sand deposit
Condition of Slope	Severe erosion and collapse are observed.
Cross-section Shape	Irregular shape
Top photo	Middle Photo
	
Inlet photo	Outlet Photo
	

Facility No. (End of Canal, 2023)	26	
Facility Width (m)	-	
Gate Width (m)	1.20m	2 sates
Gate Height (m)	1.20m	
Flood Height from the bottom	-	
Conduit Type	Box-culvert	
Height from the Bottom to the Road top	-	
Road Width (m) x Length (m)	-	

Top photo	Middle Photo
	
Main canal Upstream photo	Outlet Photo
	

Facility No. (Flood-affected area)	27
Flood frequency	Every year
Flood affected area	Left bank (North): 1.0km Right bank (South): 1.5km
Flood affected height	1.50m from the bank's top

Upper side photo	Middle Photo
	
Middle Photo	Borrow pit Photo
	

Facility No. (Clean Water Pump Station, Dong steung katp, Private company)	0
Facility Capacity	480 m^3/ 700 households
Future plan	2,000 households
Water shortage period	Feb. to May
Pum station photo	Treatment tank Photo
	
Making headrace canal in the reserve Photo	Crosspoint Photo
	

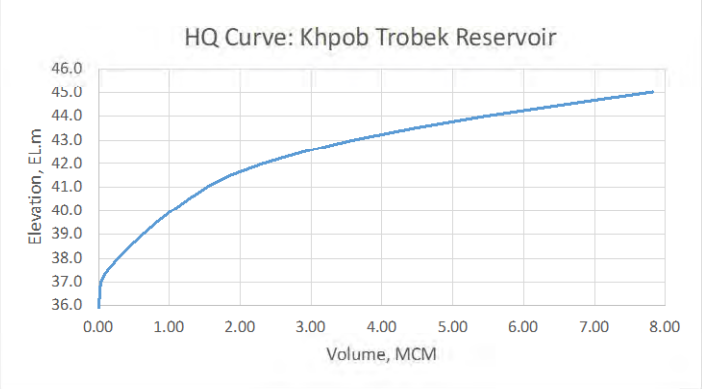
APPENDIX III-4

HEIGHT-VOLUME CURVE FOR MAIN RESERVOIRS

Khpob Trobek Reservoir

EL.m	Surface Area, m^2	Volume, MCM	Remarks
33.0	772	0.00	
33.5	1,726	0.00	
34.0	2,292	0.00	
34.5	2,797	0.00	
35.0	3,731	0.00	
35.5	4,869	0.01	
36.0	7,346	0.01	
36.5	16,573	0.01	
37.0	81,656	0.03	
37.5	267,746	0.12	
38.0	321,411	0.27	
38.5	355,072	0.44	
39.0	387,203	0.62	
39.5	425,054	0.82	
40.0	462,111	1.03	
40.2	479,097	1.13	LWL
40.5	504,577	1.27	
41.0	577,519	1.53	
41.5	821,435	1.85	
42.0	1,061,909	2.31	
42.3	1,188,003	2.64	
42.5	1,279,464	2.89	
43.0	1,601,018	3.58	
43.3	1,792,121	4.10	HWL
43.5	1,919,524	4.45	
44.0	2,162,944	5.45	FWL
45.0	2,574,022	7.82	Dike Top

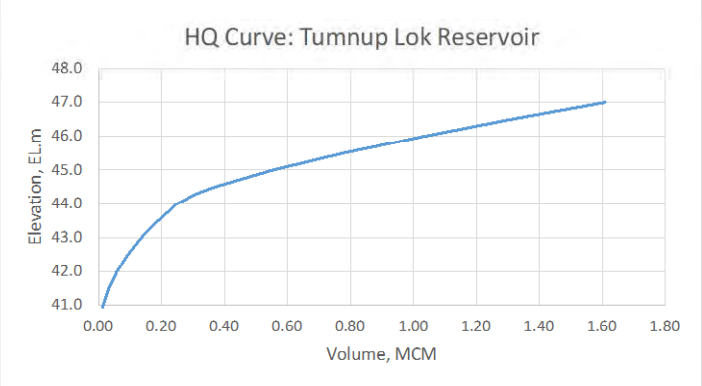
Catchment Area	141	km2
LWL	40.2	EL.m
HWL	43.3	EL.m
Effective Storage	2.98	MCM
Dike top	45	EL.m



Tumnup Lok Reservoir

EL.m	Surface Area, m^2	Volume, MCM	Remarks
40.5	12,544	0.00	
41.0	28,647	0.01	
41.5	45,132	0.03	
42.0	63,039	0.06	LWL
42.5	80,315	0.09	
43.0	97,196	0.14	
43.3	106,655	0.16	HWL
44.0	158,330	0.25	
44.3	234,823	0.31	
44.5	294,835	0.37	FWL
45.0	389,451	0.55	
45.5	456,042	0.78	Dike Top
46.0	515,598	1.03	
46.5	565,714	1.31	
47.0	605,750	1.61	

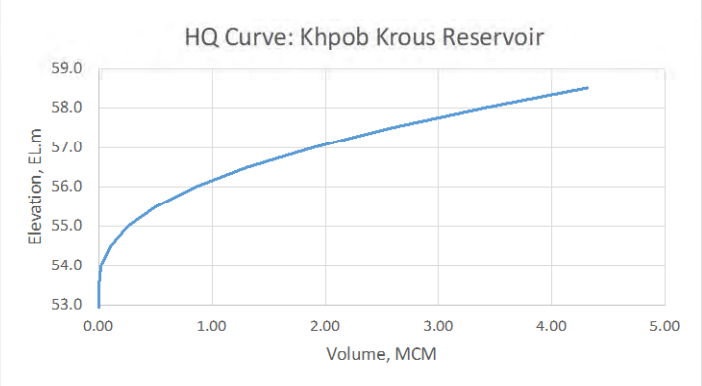
Catchment Area	347	km2
LWL	42	EL.m
HWL	43.3	EL.m
Effective Storage	0.11	MCM
Dike top	45.5	EL.m



Khpob Krous Reservoir

EL.m	Surface Area, m^2	Volume, MCM	Remarks
52.0	1,506	0.00	
52.5	1,979	0.00	
53.0	2,770	0.00	
53.5	7,815	0.01	LWL
54.0	90,541	0.02	
54.5	240,707	0.11	
55.0	416,647	0.26	HWL
55.5	619,492	0.51	
56.0	834,760	0.86	
56.5	1,052,542	1.31	FWL
57.0	1,311,786	1.88	
57.5	1,572,551	2.58	Dike Top
58.0	1,791,846	3.39	
58.5	1,992,223	4.31	

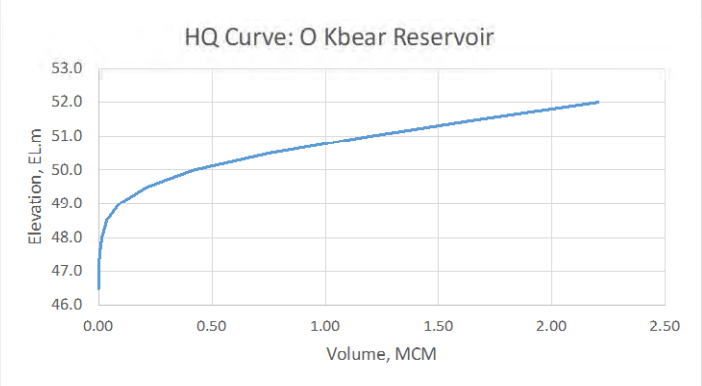
Catchment Area	101	km2
LWL	54	EL.m
HWL	57	EL.m
Effective Storage	1.86	MCM
Dike top	58	EL.m



O Kbear Reservoir

EL.m	Surface Area, m^2	Volume, MCM	Remarks
46.5	1,810	0.00	
47.0	3,554	0.00	LWL
47.5	10,945	0.01	
48.0	30,313	0.01	
48.5	60,418	0.04	
49.0	186,501	0.09	
49.5	317,509	0.22	
50.0	541,359	0.42	HWL
50.5	798,808	0.75	FWL
51.0	945,334	1.18	
51.5	1,051,754	1.67	Dike Top
52.0	1,097,968	2.20	

Catchment Area	85	km2
LWL	47	EL.m
HWL	50	EL.m
Effective Storage	0.42	MCM
Dike top	51.5	EL.m



APPENDIX III-5

RESULT OF SOIL TEST

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

Suitability of Material as Fill

Project : Kpob Trobek and Tumnub Lok Dams Flood Control , Irrigation and Drainage (1/3)

Location : Takeo Province

Condition : Soil — Borrow Pit No. 1

Coordinate(WGS-84) : X:0445943 , Y :1223982 — Sample Description : Red silty sand

Test	Acceptable range	Depth(m) 0.10-0.96
Sieve Analysis		
Sieve size	% Passing by wt.	
63 mm	100	100
16 mm	70 - 100	100
2 mm	35 - 100	99.84
0.063 mm	30 - 50	20.12
Consistency Limits	%	
Liquid Limit	30 - 70	18.20
Plasticity Index	more than 12	2.22
Linear Shrinkage	less than 18	0.70
Erodibility Criteria		
Slaking time	more than 30 secs	
Air Dried		30Sec
Moist remoulded		30Sec
Anilus Development	not more than 5 mm	
Natural		0mm
Moist remoulded		0mm
Suitability :		

Date : 20-Apr-24
Chief of Soil Quality Analysis Office

KET CHANSAVUTH

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

SUMMARY OF LABORATORY TEST RESULTS

Project : Kpob Trobek and Tumnub Lok Dams Flood Control , Irrigation and Drainage (1/3)

Location : Takeo Province

Codition : Soil — Date of Testing : 5-Apr-24

Tested by :Mr. Sum Bunkong — Checked by : KET CHANSAVUTH

Sample Location & Borrow Pit No.	Sample No.	Depth m	Natural Water Content %	Specific Gravity Gs	Atterberg Limits LL %	PL %	PI %	IL %	Grain Size Distribution Gravel (%)	Sand (%)	Silt+Clay (%)	<425µ m (%)	Linear Shrinkage,%	Soil Classification
X: 0445943 Y: 1223982	1	0.10-0.96	13.31	2.525	18.2	16	2.2		0	80	20	88.15	0.7	CL-ML

Date : 22-Apr-24
Chief of Soil Quality Analysis Office

KET CHANSAVUTH

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

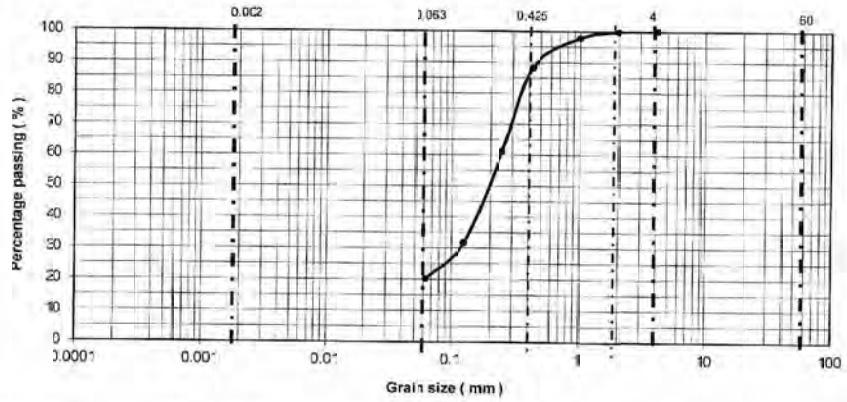
Project Name: Kpob Trobek and Tumnub Lok dams Flood Control, Irrigation and Drainage(1/3)

SIEVING ANALYSIS

Borrow Pit No. : 1
Depth : 0.10-0.96m
Sample No.:
Testing Date : 3-Apr-24
Sample location :

Checked by : Mr.Ket Chansavuth
Tested by : Mr.Sum Bunkong

PARTICLE SIZE DISTRIBUTION CURVE



Grain size(mm)	% passing
0.063	20.12
0.125	31.67
0.250	61.09
0.425	88.15
1	97.81
2	99.84
4	100.00
8	
16	
31.5	
63	

Silt+Clay :	20 %
Sand :	80 %
Gravel :	0 %

Sample Description :

CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles
	SILT			SAND			GRAVEL			

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

Project : Kpob Trobek and Tumnub Lok Dams Flood Control, Irrigation and Drainage(1/3)

LIQUID LIMIT AND PLASTIC LIMIT TEST

Location :
Sample No. :
Testing Date : 5-Apr-24
Checked by : Mr. Ket Chansavuth
Tested by : Ms. Chou Sarem

Depth of Sample :

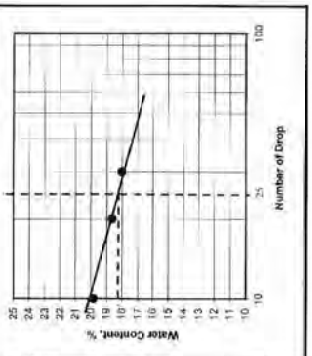
Test for Liquid Limit

Number of Drop		10	20	30
Water Content	Container No.			
	ma (g)	86.36	100.74	94.67
	mb (g)	74.41	87.15	82.34
	mc (g)	14.21	14.27	14.01
	w (%)	19.85	18.65	18.04

Test for Plastic Limit

Water Content	Container No.		
	ma (g)	42.91	
	mb (g)	38.98	
	mc (g)	14.39	
	w (%)	15.98	

Liquid Limit Wt. (%)	Plastic Limit Wp. (%)	Plasticity Index PI (%)
18.20	15.98	2.22



W = (ma - mb) / (mb - mc) x 100
ma = Wt. of Wet Sample+container
mb = Wt. of Dry Sample+container
mc = Wt. of Container

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

Suitability of Material as Fill

Project : Kpob Trobek and Tumnub Lok Dams Flood Control , Irrigation and Drainage (2/3)

Location : Takeo Province

Condition : Soil — Borrow Pit No. :

Coordinate(WGS-84) X:0442815 ; Y:1225008 — Sample Description : Red-brown silty sand

Test	Acceptable range	Depth(m) 0.10-0.98
Sieve Analysis		
Sieve size	% Passing by wt.	
53 mm	100	100
16 mm	70 - 100	100
2 mm	35 - 100	94.16
0.053 mm	30 - 90	19.4
Consistency Limits	%	
Liquid Limit	30 - 70	15.80
Plasticity Index	more than 12	2.69
Linear Shrinkage	less than 18	0.70
Erodibility Criteria		
Slaking time	more than 30 secs	
Air Dried		< 30Sec
Moist remoulded		< 30Sec
Anitus Dev'ment	not more than 5 mm	
Natural		0mm
Moist remoulded		0mm
Suitability :		

Date : 20-Apr-24
Chief of Soil Quality Analysis Office

KET CHANSAVUTH

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

SUMMARY OF LABORATORY TEST RESULTS

Project : Kpob Trobek and Tumnub Lok Dams Flood Control , Irrigation and Drainage (2/3)

Location : Takeo Province

Codition : Soil — Date of Testing : 5-Apr-24

Tested by : Mr. Sum Bunkong — Checked by : KET CHANSAVUTH

Sample Location & Borrow Pit No.	Sample No.	Depth m	Natural Water Content %	Specific Gravity Gs	Atterberg Limits LL %	PL %	PI %	I_L %	Grain Size Distribution Gravel (%)	Sand (%)	Silt+Clay (%)	<425µm (%)	Linear Shrinkage %	Soil Classification
X: 0442815 Y: 1225008	1	0.10-0.98	13.52	2.624	15.8	13.1	2.7		1	80	19	52.97	0.7	CL-ML

Date : 22-Apr-24
Chief of Soil Quality Analysis Office

KET CHANSAVUTH

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

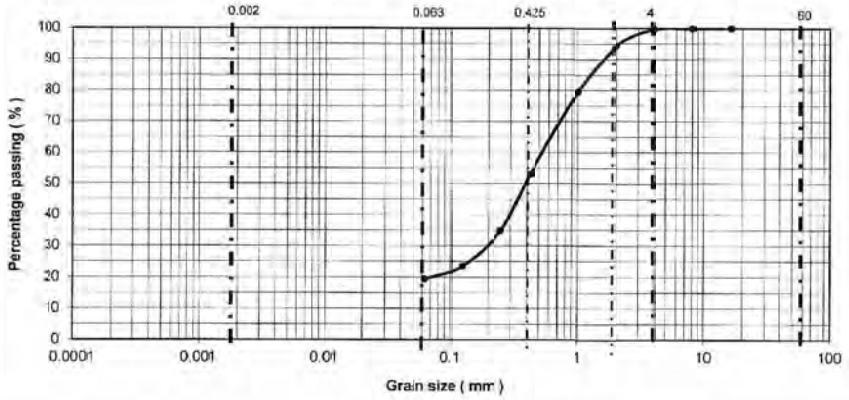
Project Name: Kpob Trobek and Tumnub Lok dams Flood Control, Irrigation and Drainage(2/3)

SIEVING ANALYSIS

Borrow Pit No. : 1
Depth : 0.10-0.38m
Sample No.:
Testing Date : 8-Apr-24
Sample location :

Checked by : Mr.Ket Chansavuth
Tested by : Mr.Sum Bunkong

PARTICLE SIZE DISTRIBUTION CURVE



Grain size(mm)	% passing
0.063	19.40
0.125	23.47
0.250	34.84
0.425	52.97
1	79.33
2	94.16
4	99.86
8	99.92
16	100.00
31.5	
63	

Silt+Clay :	19 %
Sand :	80 %
Gravel :	1 %

Sample Description :

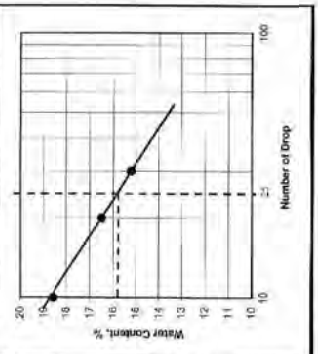
CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles
	SILT			SAND			GRAVEL			

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

Project : Kpob Trobek and Tumnub Lok Dams Flood Control, Irrigation and Drainage(2/3)

LIQUID LIMIT AND PLASTIC LIMIT TEST

Location :
Sample No. :
Depth of Sample :
Testing Date : 5-Apr-24
Checked by : Mr. Ket Chansavuth
Tested by : Ms. Chou Sarem



Test for Liquid Limit

Number of Drop		10	20	30
Container No.				
Water Content	ma (g)	92.46	83.54	85.98
	mb (g)	80.19	73.70	76.48
	mc (g)	14.11	14.03	14.07
	w (%)	18.57	16.49	15.22

Test for Plastic Limit

Container No.			
Water Content	ma (g)	68.34	
	mb (g)	62.08	
	mc (g)	14.32	
	w (%)	13.11	

Liquid Limit Wk. (%)	Plastic Limit Wp. (%)	Plasticity Index, PI (%)
15.80	13.11	2.69

W = (ma - mb) / (mb - mc) x 100
ma = Wt. of Wet Sample+container
mb = Wt. of Dry Sample+container
mc = Wt. of Container

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

Suitability of Material as Fill

Project : Kpob Trobek and Tumnub Lok Dams Flood Control Irrigation and Drainage (3/3)

Location : Takeo Province

Condition : Soil — Borrow Pit No. 1

Coordinate(WGS-84) : X:0440227 ; Y:1230135 — Sample Description : Dark gray silty sand

Test	Acceptable range	Depth(m) 0.10-0.90
Sieve Analysis		
Sieve size	% Passing by wt.	
53 mm	100	100
16 mm	70 - 100	100
2 mm	35 - 100	98.06
0.053 mm	30 - 90	38.98
Consistency Limits	%	
Liquid Limit	30 - 70	19.80
Plasticity Index	more than 12	1.70
Linear Shrinkage	less than 18	0.70
Erodibility Criteria		
Slaking time	more than 30 secs	
Air Dried		1min
Moist remoulded		1min
Anlus Development	not more than 5 mm	
Natural		0mm
Moist remoulded		0mm
Suitability :		

Date : 20-Apr-24
Chief of Soil Quality Analysis Office

KET CHANSAVUTH

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

SUMMARY OF LABORATORY TEST RESULTS

Project : Kpob Trobek and Tumnub Lok Dams Flood Control , Irrigation and Drainage (3/3)

Location : Takeo Province

Codition : Soil — Date of Testing : 6-Apr-24

Tested by : Mr. Sum Bunkong — Checked by : KET CHANSAVUTH

Sample Location & Borrow Pit No.	Sample No.	Depth m	Natural Water Content %	Specific Gravity Gs	Atterberg Limits LL %	PL %	PI %	I %	Grain Size Distribution Gravel (%)	Sand (%)	Silt+Clay (%)	<425µ m (%)	Linear Shrinkage,%	Soil Classification
X: 0440227 Y: 1230135	1	0.10-0.90	21.56	2.512	19.8	18.1	1.7		0	61	39	87.38	0.7	CL-ML

Date : 22-Apr-24
Chief of Soil Quality Analysis Office

KET CHANSAVUTH

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

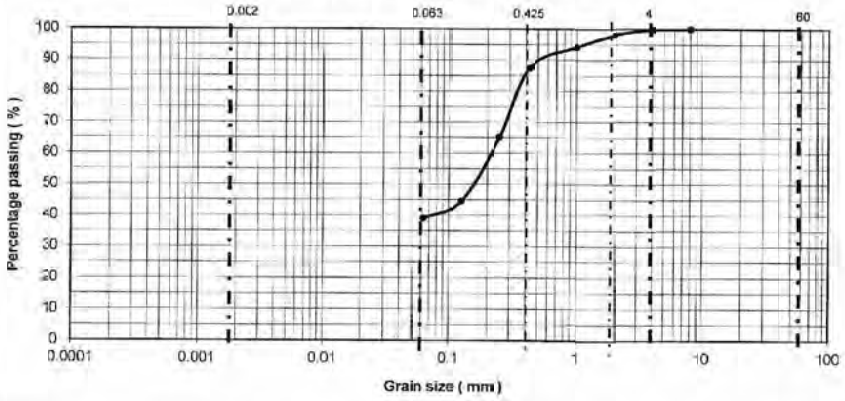
Project Name: Kpob Trobek and Tumnub Lok dams Flood Control, Irrigation and Drainage(3/3)

SIEVING ANALYSIS

Borrow Pit No. : 1 | Testing Date : 3-Apr-24
Depth : 0.10-0.90m | Sample No.: | Sample location :

Checked by : Mr.Ket Chansavuth
Tested by : Mr.Sum Bunkong

PARTICLE SIZE DISTRIBUTION CURVE



Grain size(mm)	% passing
0.063	38.98
0.125	44.49
0.250	65.06
0.425	87.38
1	94.18
2	98.06
4	99.73
8	100.00
16	
31.5	
63	

Silt+Clay :	39 %
Sand :	61 %
Gravel :	0 %

Sample Description :

CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles
	SILT			SAND			GRAVEL			

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

Project : Kpob Trobek and Tumnub Lok Dams Flood Control, Irrigation and Drainage(3/3)

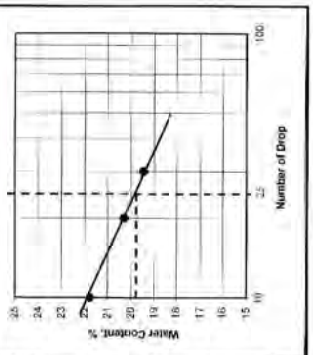
LIQUID LIMIT AND PLASTIC LIMIT TEST

Location :
Sample No. :
Depth of Sample :

Testing Date : 6-Apr-24
Checked by : Mr. Ket Chansavuth
Tested by : Ms. Chou Sarem

Test for Liquid Limit

Number of Drop		10	20	30
Water Content	Container No.			
	ma (g)	94.79	94.10	86.07
	mb (g)	80.35	80.67	74.35
	mc (g)	13.98	14.51	14.14
	w (%)	21.76	20.30	19.47



Test for Plastic Limit

Water Content	Container No.			Plastic Limit Wp (%)	Plasticity Index, PI (%)
	ma (g)	50.67			
	mb (g)	45.12		18.10	1.70
	mc (g)	14.45			
	w (%)	18.10			
Liquid Limit WL (%)		19.60			

$$W = (ma - mb) / (mb - mc) \times 100$$

ma = Wt. of Wet Sample+container
mb = Wt. of Dry Sample+container
mc = Wt. of Container

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

Suitability of Material as Fill

Project : Spean Sraeng Flood Control , Irrigation and Drainage
Location : Siem Reap Province

Condition : Soil — Borrow Pit No. 1
Coordinate(WGS-84) : X:0331306 ; Y:1512731 — Sample Description : Red-brown sancy clay

Test	Acceptable range	Depth(m) 0.10-0.80
Sieve Analysis		
Sieve size	% Passing by wt.	
63 mm	100	100
16 mm	70 - 100	100
2 mm	35 - 100	66.99
0.063 mm	30 - 90	56.51
Consistency Limits	%	
Liquid Limit	30 - 70	33.16
Plasticity Index	more than 12	18.45
Linear Shrinkage	less than 18	10.70
Erodibility Criteria		
Slaking time	more than 30 secs	
Air Dried		>5min
Moist remoulded		>5min
Anlus Cevment	not more than 5 mm	
Natural		0mm
Moist remoulded		0mm
Suitability :		

Date : 20-Apr-24
Chief of Soil Quality Analysis Office

KET CHANSAVUTH

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

SUMMARY OF LABORATORY TEST RESULTS

Project : Spean Sraeng Flood Control , Irrigation and Drainage
Location : Siem Reap Province

Condition : Soil — Date of Testing : 5-Apr-24
Tested by :Mr. Sum Bunkong — Checked by : KET CHANSAVUTH

Sample Location & Borrow Pit No.	Sample No.	Depth m	Natural Water Content %	Specific Gravity Gs	Atterberg Limits LL %	PL %	PI %	I_L %	Grain Size Distribution Gravel (%)	Sand (%)	Silt-Clay (%)	<425µ m (%)	Linear Shrinkage %	Soil Classification
X: 0331306 Y: 1512731	1	0.10-0.80	16.66	2.639	33.2	14.7	18.5		9	34	57	32.66	10.7	CL

Date : 22-Apr-24
Chief of Soil Quality Analysis Office

KET CHANSAVUTH

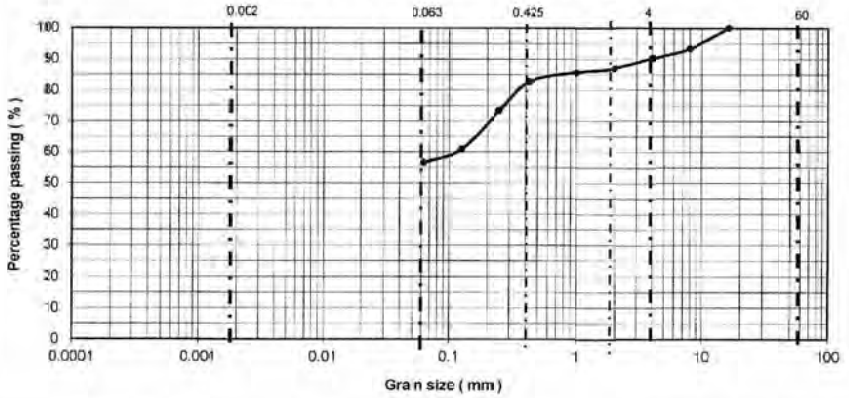
Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

Project Name: Spean Sraeng Flood Control, Irrigation and Drainage

SIEVING ANALYSIS

Borrow Pit No. : 1 | Testing Date : 8-Apr-24 | Checked by : Mr.Ket Chansavuth
Depth : 0.10-0.80m | Sample No.: | Sample location : | Tested by : Mr.Sum Bunkong

PARTICLE SIZE DISTRIBUTION CURVE



Grain size(mm)	% passing
0.063	56.51
0.125	60.83
0.250	73.31
0.425	82.66
1	85.69
2	86.99
4	90.15
8	93.35
16	100.00
31.5	
63	

Silt+Clay :	57 %
Sand :	34 %
Gravel :	9 %

Sample Description :

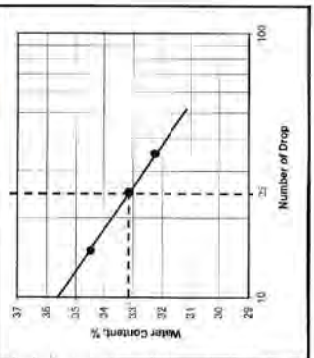
CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles
	SILT			SAND			GRAVEL			

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

Project : Spean Sraeng Flood Control , Irrigation and Drainage

LIQUID LIMIT AND PLASTIC LIMIT TEST

Location : | Testing Date : 5-Apr-24
Sample No. : | Checked by : Mr. Ket Chansavuth
Tested by : Ms. Chou Sarem



Depth of Sample

Test for Liquid Limit				
Number of Drop		15	25	35
Water Content	Container No.			
	ma (g)	90.52	86.64	86.18
	mb (g)	70.89	68.57	70.23
	mc (g)	13.96	14.08	14.56
	w (%)	34.48	33.16	32.24

Test for Plastic Limit			
Water Content	Container No.		
	ma (g)	40.82	
	mb (g)	37.24	
	mc (g)	12.90	
	w (%)	14.71	

Liquid Limit WL (%)	Plastic Limit Wp (%)	Plasticity Index PI (%)
33.16	14.71	18.45

w = (ma - mb) / (mb - mc) x 100
ma = Wt. of Wet Sample+container
mb = Wt. of Dry Sample+container
mc = Wt. of Container

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

Suitability of Material as Fill

Project : Plaing Flood Control , Irrigation and Drainage
Location : Siem Reap Province

Condition : Soil — Borrow Pit No. 1
Coordinate (WGS-84) : X:0343676 ; Y :1502600 — Sample Description : Red-brown clayey sand

Test	Acceptable range	Depth(m) 0.10-0.80
Sieve Analysis		
Sieve size	% Passing by wt.	
63 mm	100	100
16 mm	70 - 100	100
2 mm	35 - 100	76.72
0.063 mm	30 - 90	31.56
Consistency Limits	%	
Liquid Limit	30 - 70	25.00
Plasticity Index	more than 12	11.91
Linear Shrinkage	less than 18	3.60
Erodibility Criteria		
Slaking time	more than 30 secs	
Air Dried		>5min
Moist remoulded		>5min
Anlus Development	not more than 5 mm	
Natural		0mm
Moist remoulded		0mm
Suitability :		

Date : 20-Apr-24
Chief of Soil Quality Analysis Office

KET CHANSAVUTH

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

SUMMARY OF LABORATORY TEST RESULTS

Project : Plaing Flood Control , Irrigation and Drainage
Location : Siem Reap Province

Condition : Soil — Date of Testing : 5-Apr-24
Tested by : Mr. Sum Bunkong — Checked by : KET CHANSAVUTH

Sample Location & Borrow Pit No.	Sample No.	Depth m	Natural Water Content %	Specific Gravity Gs	Atterberg Limits LL %	PL %	PI %	I_L %	Grain Size Distribution Gravel (%)	Sand (%)	Silt+Clay (%)	<425µ m (%)	Linear Shrinkage,%	Soil Classification
X: 0343676 Y: 1502600	1	0.10-0.80	14.64	2.677	25	13.1	11.9		12	56	32	65.71	3.6	CL

Date : 22-Apr-24
Chief of Soil Quality Analysis Office

KET CHANSAVUTH

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

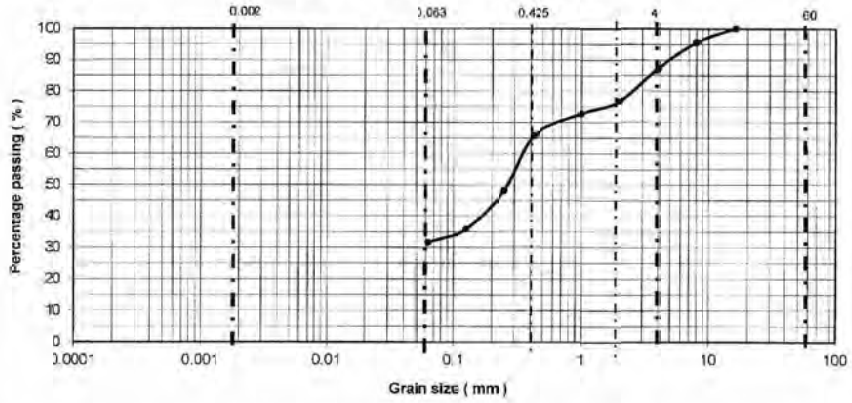
Project Name: Plaing Flood Control, Irrigation and Drainage

SIEVING ANALYSIS

Borrow Pit No. : 1 | Testing Date : 3-Apr-24
Depth : 0.10-0.80m | Sample No.: | Sample location :

Checked by : Mr.Ket Chansavuth
Tested by : Mr.Sum Bunkong

PARTICLE SIZE DISTRIBUTION CURVE



Grain size(mm)	% passing
0.063	31.56
0.125	35.85
0.250	48.17
0.425	65.71
1	72.71
2	76.72
4	87.28
8	95.55
16	100.00
31.5	
63	

Silt+Clay :	32 %
Sand :	56 %
Gravel :	12 %

Sample Description :

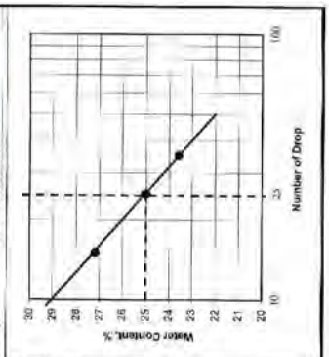
CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles
	SILT			SAND			GRAVEL			

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

Project : Plaing Flood Control, Irrigation and Drainage

LIQUID LIMIT AND PLASTIC LIMIT TEST

Location :
Sample No. :
Depth of Sample :
Testing Date : 5-Apr-24
Checked by : Mr. Ket Chansavuth
Tested by : Ms. Chou Sarem



Test for Liquid Limit

Number of Drop		15	25	35
Container No.				
Water Content	ma (g)	94.98	92.29	81.47
	mb (g)	77.67	78.81	68.71
	mc (g)	14.01	14.91	14.63
	w (%)	27.19	25.01	23.59

Test for Plastic Limit

Container No.				
Water Content	ma (g)	50.43		
	mb (g)	46.24		
	mc (g)	14.23		
	w (%)	13.09		

Liquid Limit Wt. (%)	Plastic Limit Wt. (%)	Plasticity Index PI (%)
25.00	13.09	11.91

W = (ma - mb) / (mb - mc) x 100
ma = Wt of Wet Sample+container
mb = Wt of Dry Sample+container
mc = Wt. of Container

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

Suitability of Material as Fill

Project : Khpob Krous Reservoir Flood Control Irrigation and Drainage
Location : Kampong Speu Province

Condition : Soil — Borrow Pit No. 1
Coordinate(WGS-84) : X:0443110 ; Y :123901[illegible] — Sample Description : Brown- gray sandy gravelly clay

Test	Acceptable range	Depth(m) 0.10-0.76
Sieve Analysis		
Sieve size	% Passing by w:	
63 mm	100	100
16 mm	70 - 100	100
2 mm	35 - 100	60.32
0.063 mm	30 - 90	37.42
Consistency Limits	%	
Liquid Limit	30 - 70	34.58
Plasticity Index	more than 12	16.78
Linear Shrinkage	less than 18	9.30
Erodibility Criteria		
Slaking time	more than 30 secs	
Air Dried		>5min
Moist remoulded		>5min
Anlus Deviment	not more than 5 mm	
Natural		0mm
Moist remoulded		0mm
Suitability :		

Date : 20-Apr-24
Chief of Soil Quality Analysis Office

KET CHANSAVUTH

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

SUMMARY OF LABORATORY TEST RESULTS

Project : Khpob Krous Reservoir Flood Control , Irrigation and Drainage
Location : Kampong Speu Province

Codition : Soil — Date of Testing : 6-Apr-24
Tested by :Mr. Sum Bunkong — Checked by : KET CHANSAVUTH

Sample Location & Borrow Pit No.	Sample No.	Depth m	Natural Water Content %	Specific Gravity Gs	Atterberg Limits LL %	PL %	PI %	IL %	Grain Size Distribution Gravel (%)	Sand (%)	Silt+Clay (%)	<425µm (%)	Linear Shrinkage %	Soil Classification
X: 0443110 Y: 1239011	1	0.10-0.76	11.90	2.626	34.6	17.8	16.8		32	31	37	53.21	9.3	CL

Date : 22-Apr-24
Chief of Soil Quality Analysis Office

KET CHANSAVUTH

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

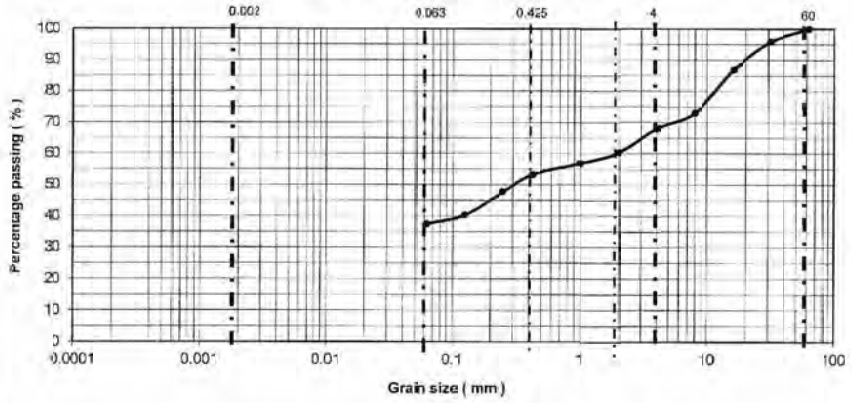
Project Name: Kpob Krous Reservoir Flood Control Irrigation and Drainage

SIEVING ANALYSIS

Borrow Pit No. : 1 | Testing Date : 8-Apr-24
Depth 0.10-0.76m | Sample No.: | Sample location :

Checked by : Mr.Ket Chansavuth
Tested by : Mr.Sum Bunkong

PARTICLE SIZE DISTRIBUTION CURVE



Grain size(mm)	% passing
0.063	37.42
0.125	40.31
0.250	47.50
0.425	53.21
1	56.78
2	60.32
4	68.02
8	73.05
16	86.39
31.5	95.82
63	100.00

Silt+Clay :	37 %
Sand :	31 %
Gravel :	32 %

Sample Description :

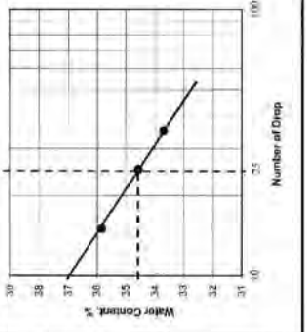
CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles
	SILT			SAND			GRAVEL			

Ministry of Water Resources and Meteorology
Engineering Department
Soil Quality Analysis Office

Project : Kpob Krous Reservoir Flood Irrigation and Drainage

LIQUID LIMIT AND PLASTIC LIMIT TEST

Location :
Sample No :
Testing Date : 6-Apr-24
Checked by : Mr. Ket Chansavuth
Tested by : Ms. Chou Sarem



Depth of Sample :

Test for Liquid Limit					
Number of Drop		15	25	35	
Water Content	Container No.				
	ma (g)	91.18	106.32	91.98	
	mb (g)	70.87	82.63	72.43	
	mc (g)	14.20	14.13	14.41	
	w (%)	35.84	34.58	33.70	

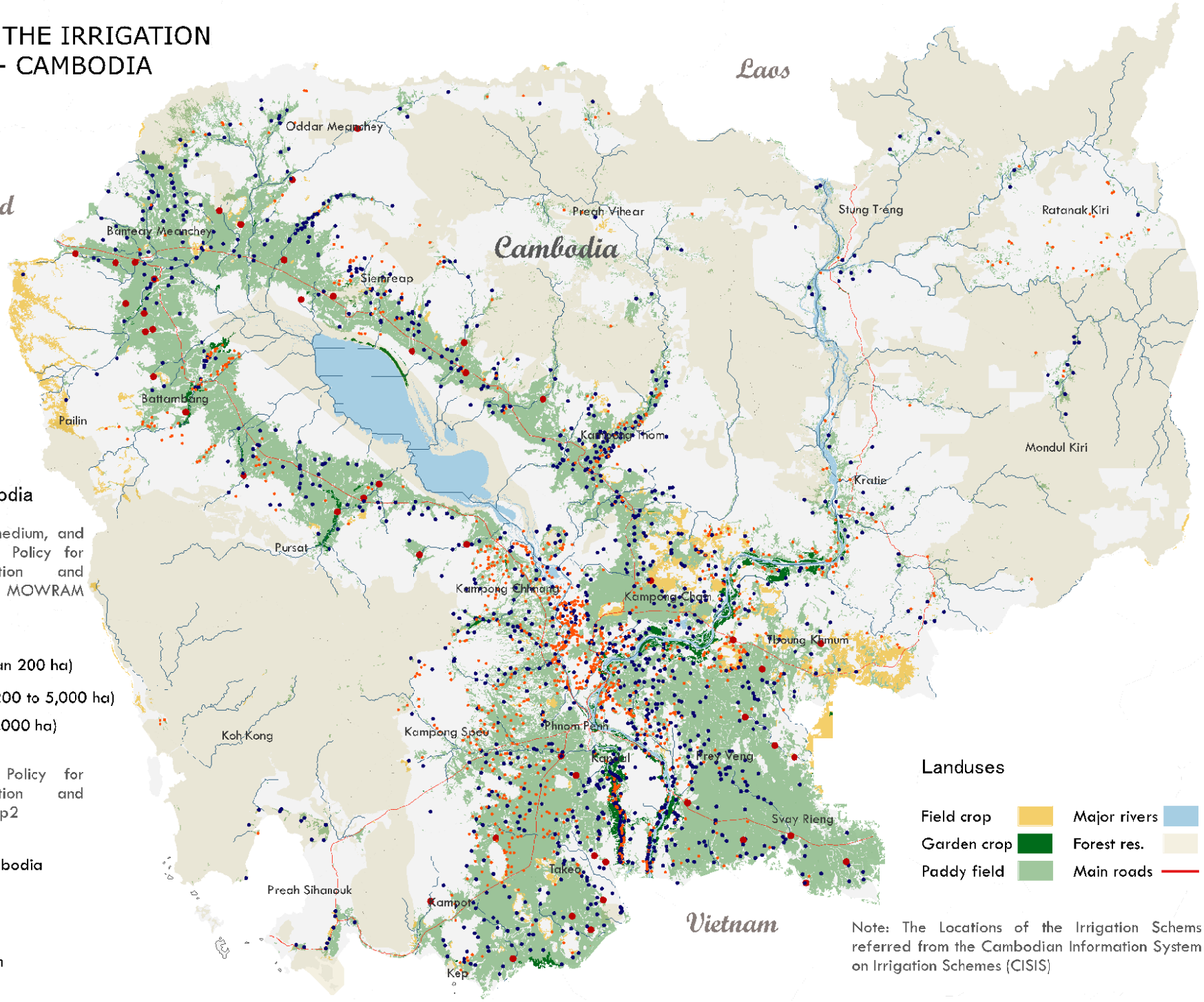
Test for Plastic Limit				
Water Content	Container No.			
	ma (g)	45.50		
	mb (g)	40.78		
	mc (g)	14.26		
	w (%)	17.80	Plastic Limit Wp (%)	Plasticity Index PI (%)
			17.80	16.76

Liquid Limit WL (%) : 34.55

APPENDIX III-6

MAP OF IRRIGATION SCHEMES IN CAMBODIA

LOCATIONS OF THE IRRIGATION SCHEMES - CAMBODIA



LEGEND

Irrigation Schemes Cambodia

The categorization of small, medium, and large scale is based on the Policy for Sustainability of Operation and Maintenance Irrigation Systems, MOWRAM (2000) as follows:

- Small Scale (Area less than 200 ha)
- Medium (Area between 200 to 5,000 ha)
- Large (Area more than 5,000 ha)

Source: MOWRAM (2000), Policy for Sustainability of Operation and Maintenance Irrigation Systems, p2

Province boundary - Cambodia

0 30 60 90 km

Landuses

Field crop	Major rivers
Garden crop	Forest res.
Paddy field	Main roads

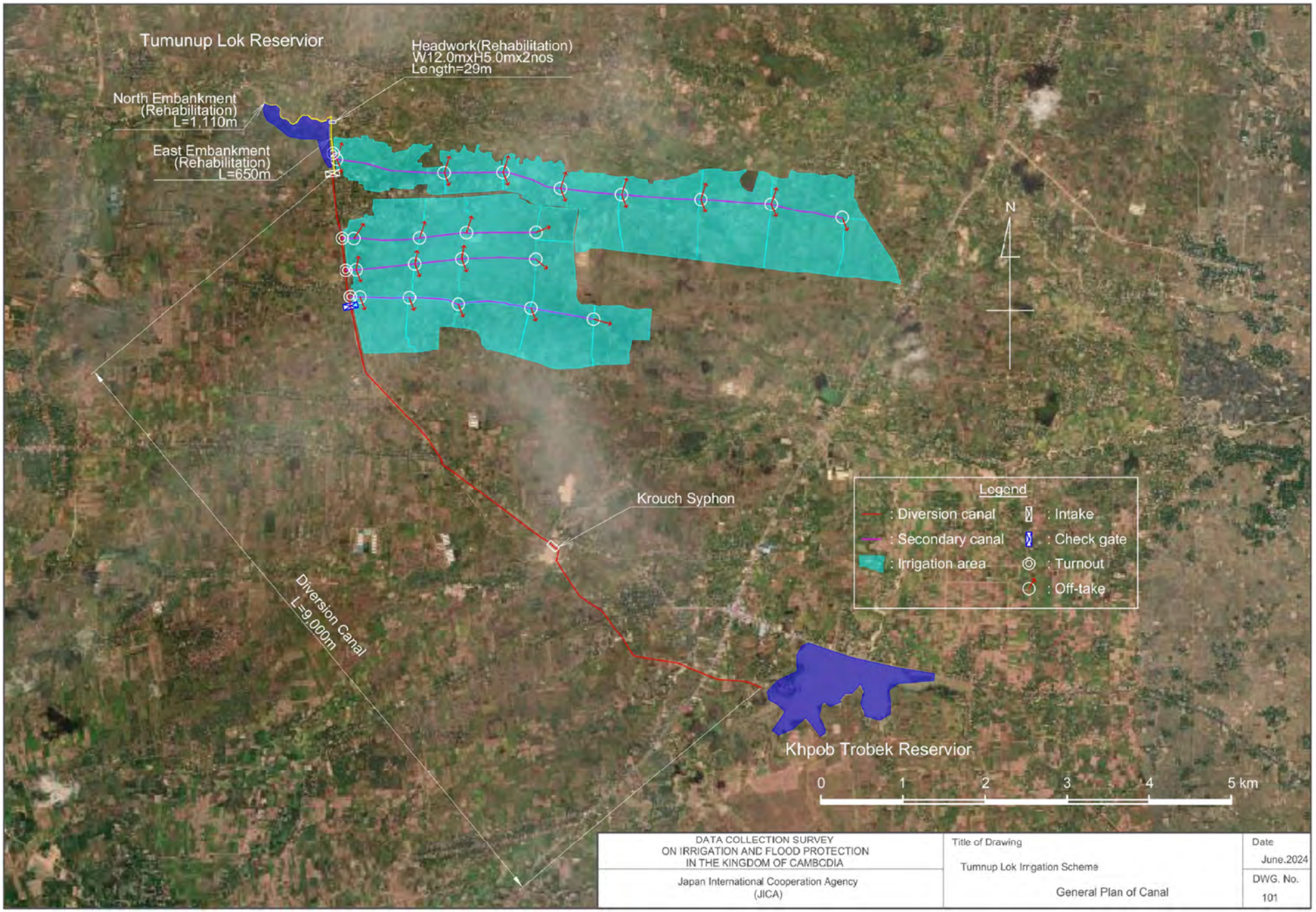
Note: The Locations of the Irrigation Schems referred from the Cambodian Information System on Irrigation Schemes (CISIS)

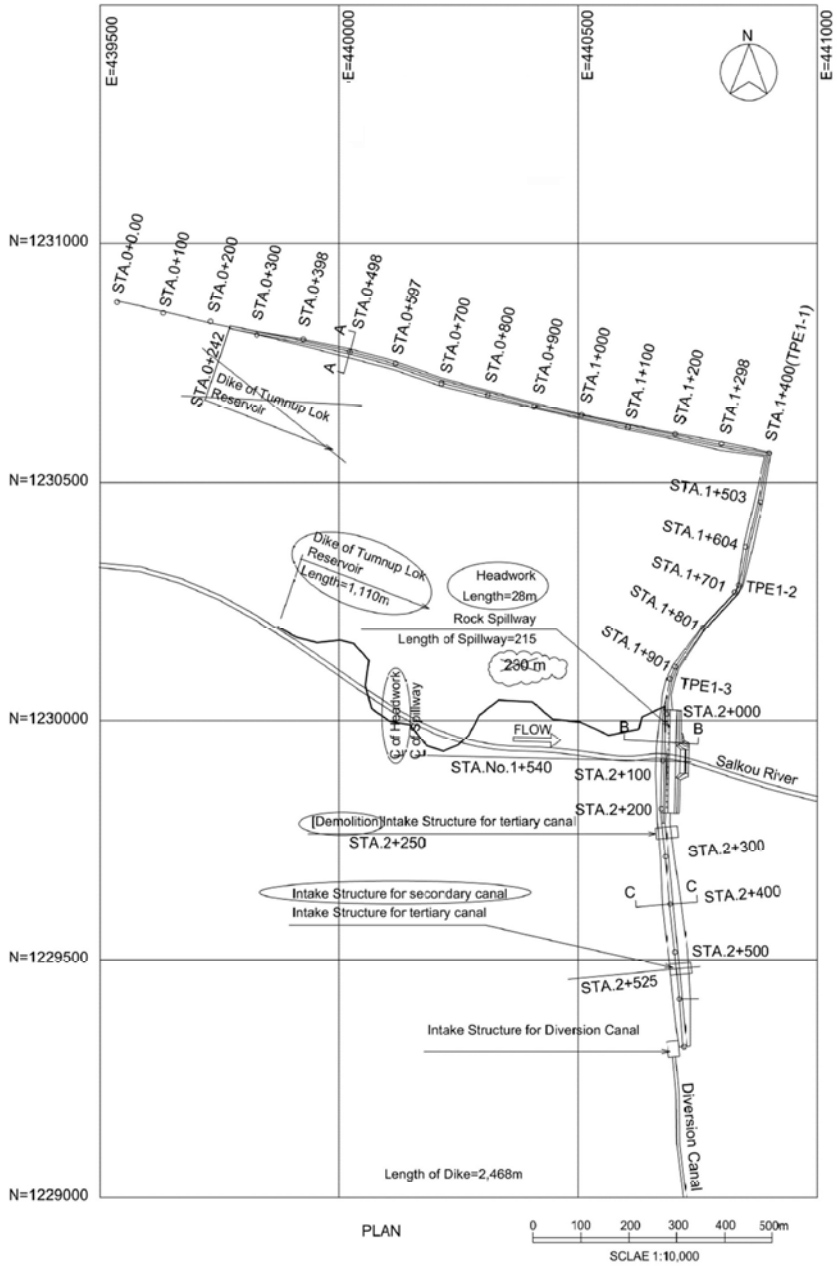
Appendix IV

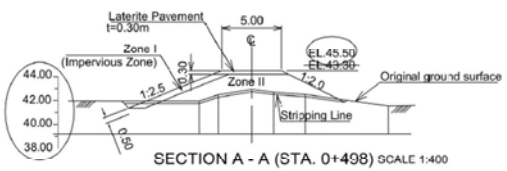
Drawings

Contents

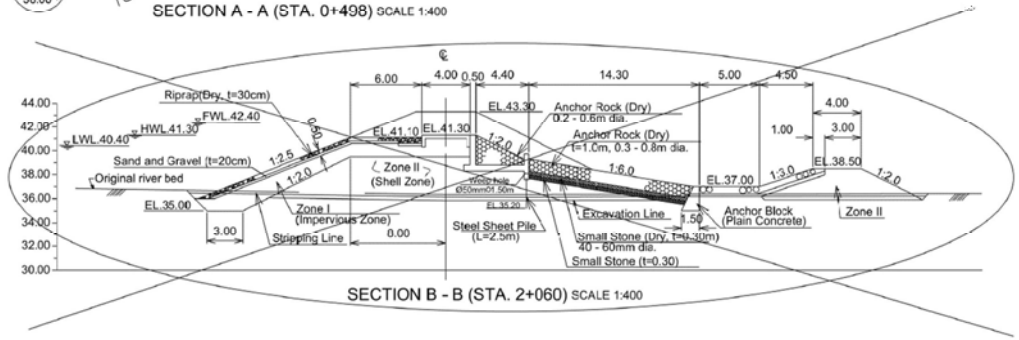
IV-1. TUMNUP LOK


Tumunup Lok Reservior
Headwork(Rehabilitation)
W12.0mxH5.0mx2nos
Length=29m
North Embankment
(Rehabilitation)
L=1,110m
East Embankment
(Rehabilitation)
L=650m
N
Krouch Syphon
Diversion Canal
L=9,000m
Legend
: Diversion canal
: Secondary canal
: Irrigation area
: Intake
: Check gate
: Turnout
: Off-take
Khpob Trobek Reservior
0
1
2
3
4
5 km
DATA COLLECTION SURVEY
ON IRRIGATION AND FLOOD PROTECTION
IN THE KINGDOM OF CAMBODIA
Japan International Cooperation Agency
(JICA)
Title of Drawing
Tumnup Lok Irrigation Scheme
General Plan of Canal
Date
June.2024
DWG. No.
101

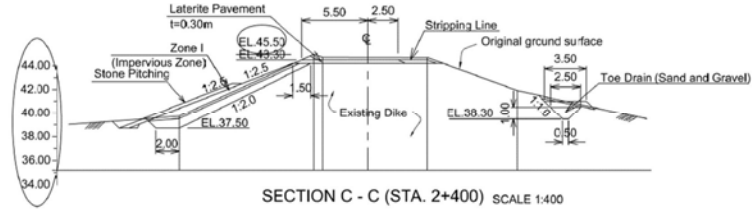




SECTION A - A (STA. 0+498) SCALE 1:400



SECTION B - B (STA. 2+060) SCALE 1:400



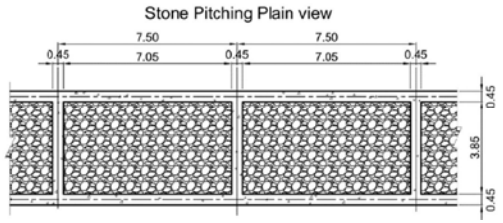
SECTION C - C (STA. 2+400) SCALE 1:400

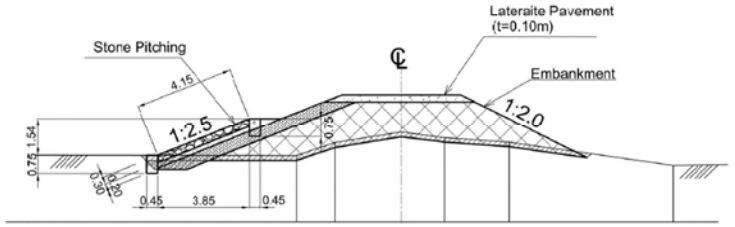
Note:
1. Original of this drawing was prepared for "The Study on the Rehabilitation and Reconstruction of Agricultural Production System in the Slakou River Basin" by JICA Study Team in January 2002.
2. First modification was modified by JICA Study Team in September 2012".
3. Modified portion by the Survey Team are marked by ellipse as follow:

0 5 10 15 20m
SCALE 1:400

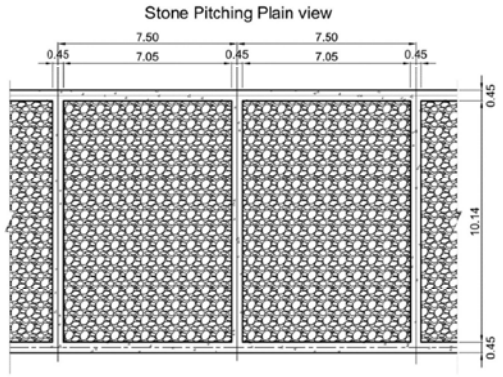
Note; Zone I (Impervious Zone); Mixed Soil Material of Laterite, Clayey and Excavated Soil at Reservoir Area
Zone II (Shell Zone); Excavated Soil at Reservoir Area (CL, SC, SM)

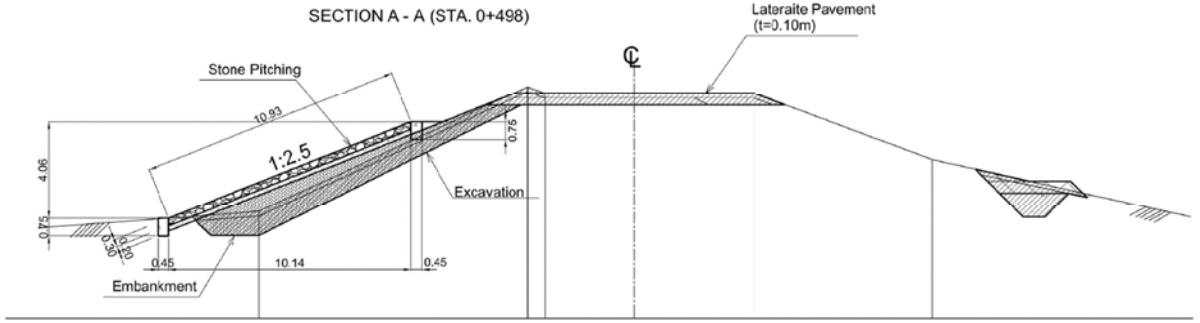
DATA COLLECTION SURVEY ON IRRIGATION AND FLOOD PROTECTION IN THE KINGDOM OF CAMBODIA	Title of Drawing	Date
	Tumnup Lok Reservoir	June.2024
Japan International Cooperation Agency (JICA)	General Plan	DWG. No. 102





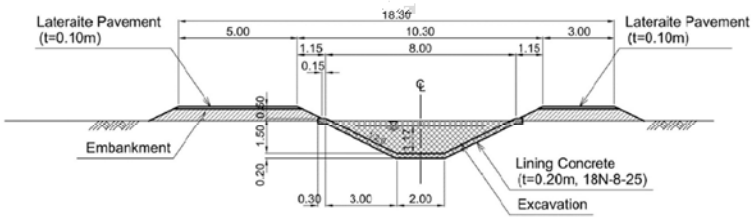
SECTION A - A (STA. 0+498)



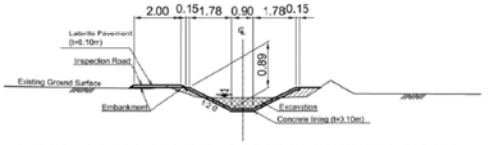


SECTION C - C (STA. 2+400)

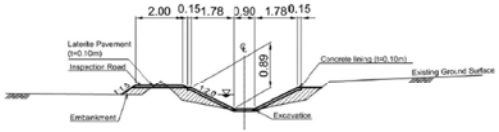
TYPICAL SECTION OF DIKE



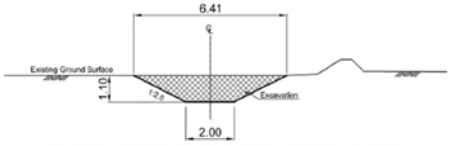
TYPICAL CROSS SECTION-DIVERSION CANAL ; TYPE LINING



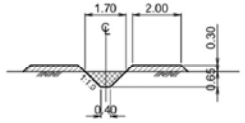
TYPICAL CROSS SECTION-SECONDARY CANAL TYPE Ⅰ



TYPICAL CROSS SECTION-SECONDARY CANAL TYPE Ⅱ



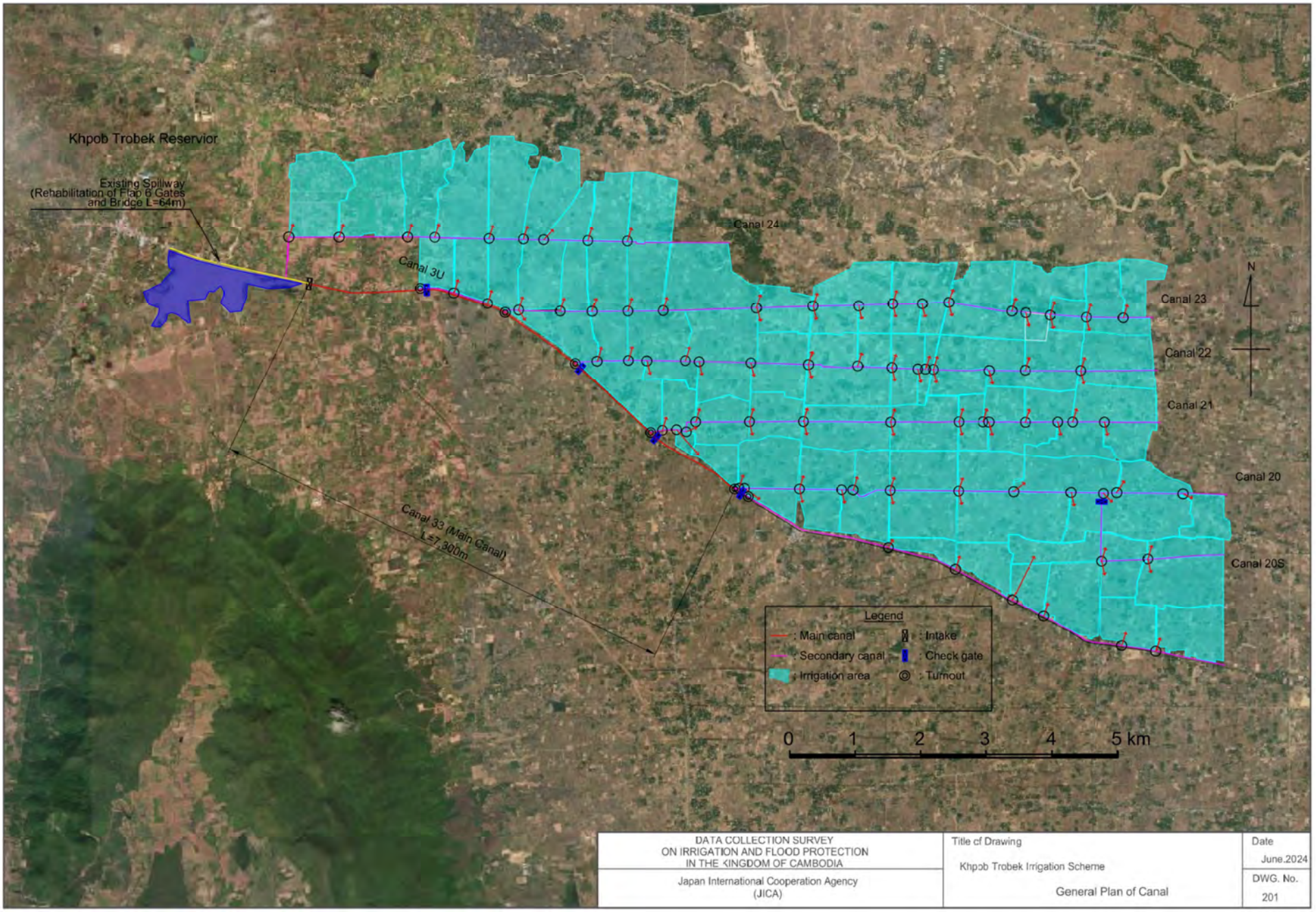
TYPICAL CROSS SECTION-DRAINAGE CANAL

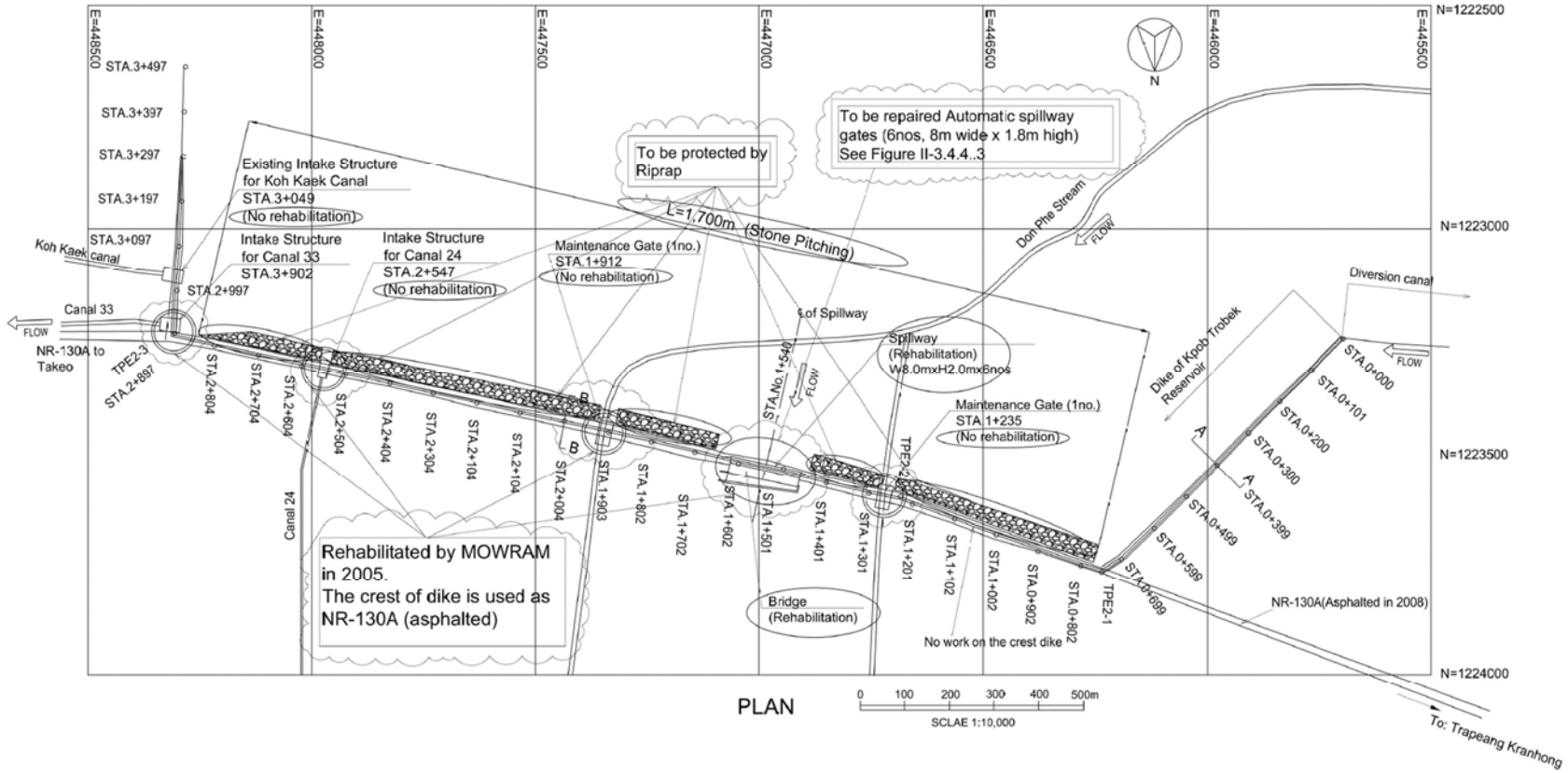


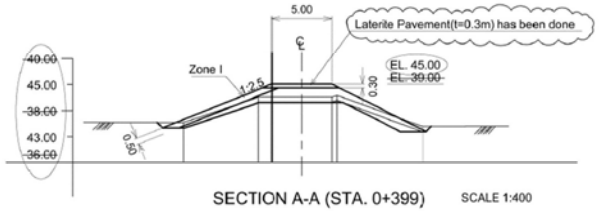
TYPICAL CROSS SECTION-BRANCH CANAL

NO SCALE	DATA COLLECTION SURVEY ON IRRIGATION AND FLOOD PROTECTION IN THE KINGDOM OF CAMBODIA	Title of Drawing: Tumnup Lok Irrigation Scheme — **Typical Section**	Date: June.2024
	Japan International Cooperation Agency (JICA)		DWG. No. 103

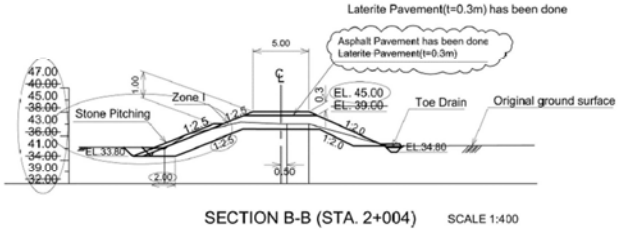
IV-2. KHPOB TROBEK


Khpob Trobek Reservior
Existing Spillway
(Rehabilitation of Flap 6 Gates
and Bridge L=64m)
Canal 24
Canal 3U
Canal 23
Canal 22
Canal 21
Canal 20
Canal 20S
N
Canal 33 (Main Canal)
L=7,300m
Legend
: Main canal
: Secondary canal
: Irrigation area
: Intake
: Check gate
: Turnout
0 1 2 3 4 5 km
DATA COLLECTION SURVEY
ON IRRIGATION AND FLOOD PROTECTION
IN THE KINGDOM OF CAMBODIA
Japan International Cooperation Agency
(JICA)
Title of Drawing
Khpob Trobek Irrigation Scheme
General Plan of Canal
Date
June.2024
DWG. No.
201





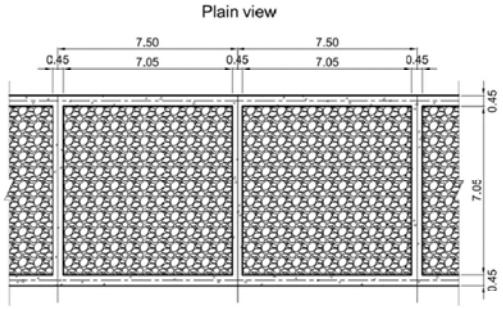
SECTION A-A (STA. 0+399) SCALE 1:400

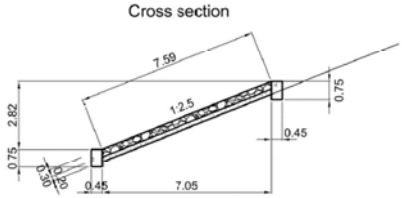


SECTION B-B (STA. 2+004) SCALE 1:400

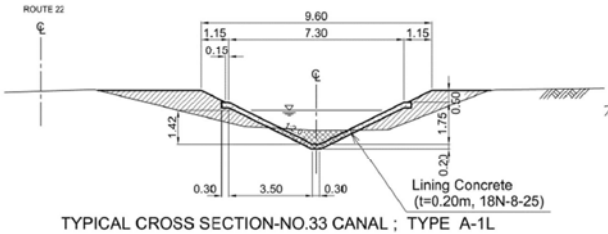
Note:
1. Original of this drawing was prepared for "The Study on the Rehabilitation and Reconstruction of Agricultural Production System in the Siakou River Basin" by JICA Study Team in January 2002.
2. Modified portion by the 2C12 Survey Team are marked by cloud as follow:
3. Modified portion by the 2C24 Survey Team are marked by ellipse as follow:

DATA COLLECTION SURVEY ON IRRIGATION AND FLOOD PROTECTION IN THE KINGDOM OF CAMBODIA	Title of Drawing **Khpob Trobek Reservoir** **General Plan**	Date June.2024
Japan International Cooperation Agency (JICA)		DWG. No. 202

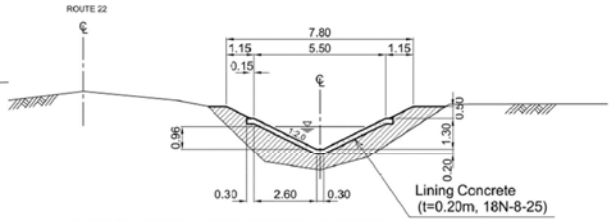




TYPICAL SECTION OF STONE PITCHING



TYPICAL CROSS SECTION-NO.33 CANAL ; TYPE A-1L



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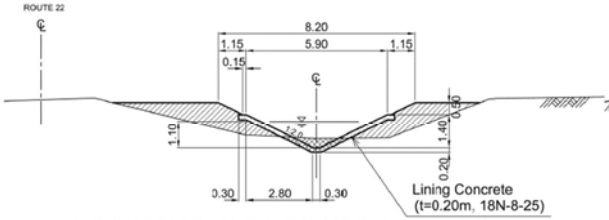
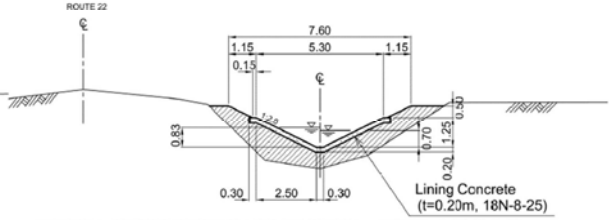
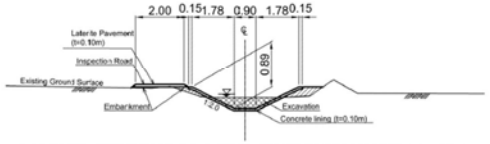


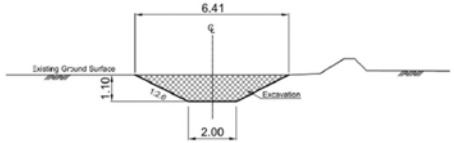
TYPICAL CROSS SECTION-NO.33 CANAL ; TYPE A-2L



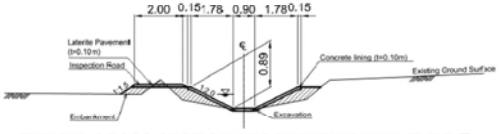
TYPICAL CROSS SECTION-NO.33 CANAL ; TYPE A-4L & A-5L



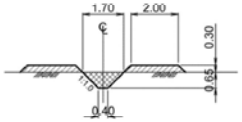
TYPICAL CROSS SECTION-SECONDARY CANAL TYPE I



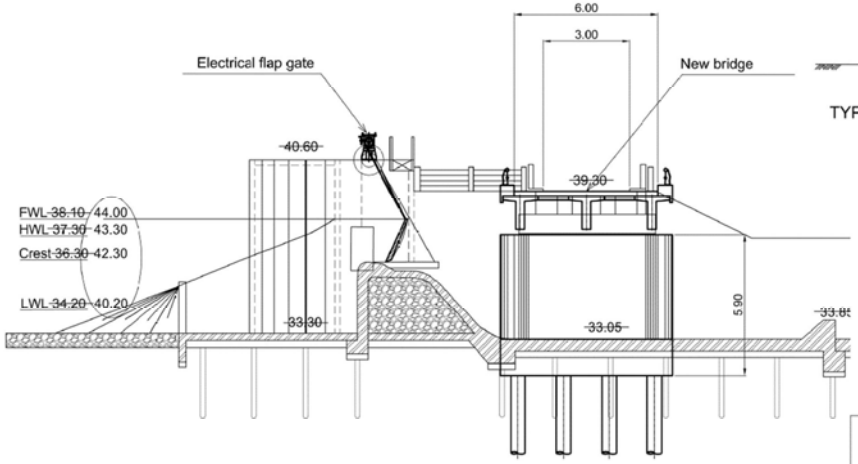
TYPICAL CROSS SECTION-DRAINAGE CANAL



TYPICAL CROSS SECTION-SECONDARY CANAL TYPE II



TYPICAL CROSS SECTION-BRANCH CANAL



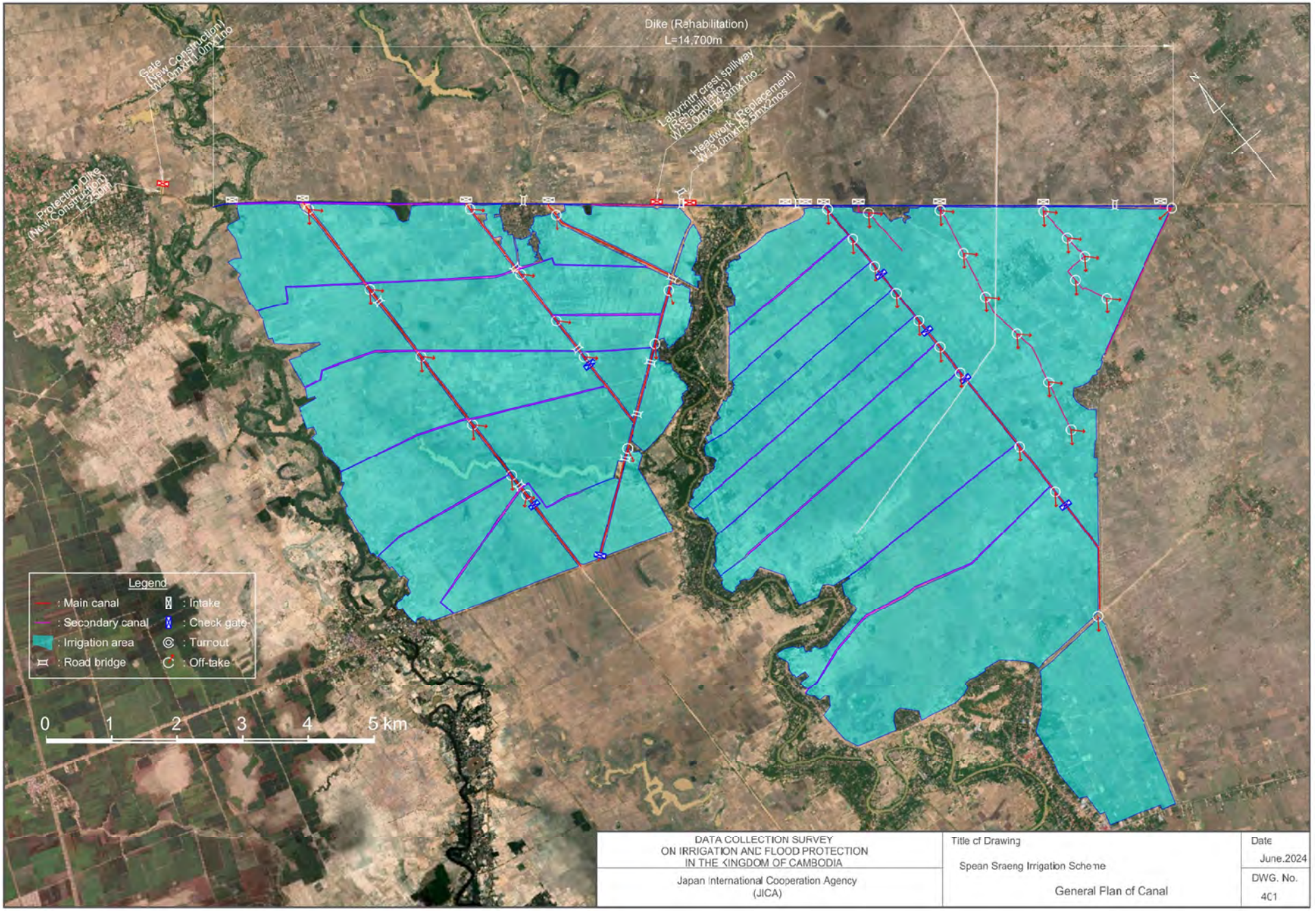
TYPICAL CROSS SECTION-SPILLWAY

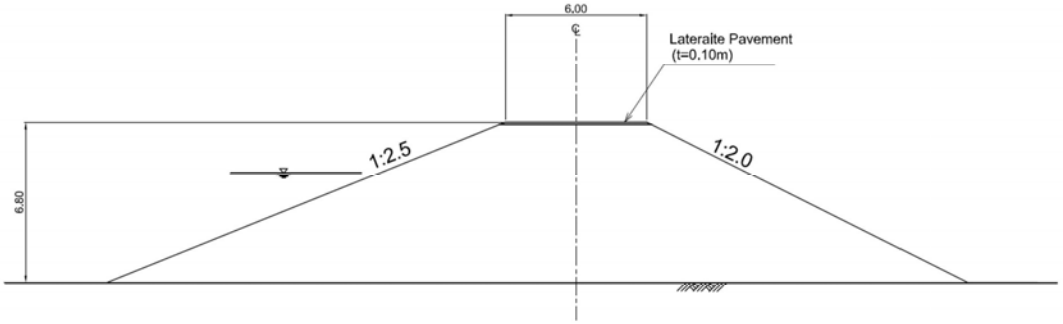
NO SCALE

Note:
1. Original of this drawing was prepared for "The Study on the Rehabilitation and Reconstruction of Agricultural Production System in the Slakou River Basin" by JICA Study Team in January 2002.
2. Modified portion by the 2012 Survey Team are marked by cloud as follow:
3. Modified portion by the 2024 Survey Team are marked by ellipse as follow:

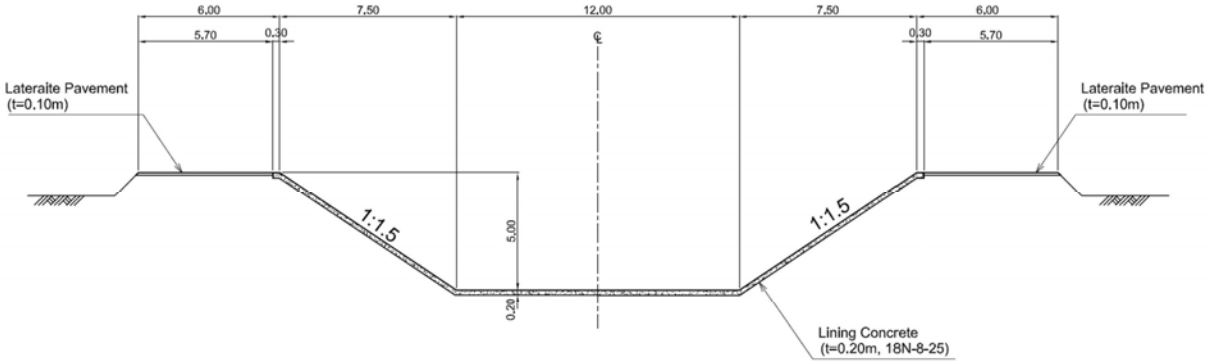
DATA COLLECTION SURVEY ON IRRIGATION AND FLOOD PROTECTION IN THE KINGDOM OF CAMBODIA	Title of Drawing Khpob Trobek Irrigation Scheme **Typical Section**	Date June.2024
Japan International Cooperation Agency (JICA)		DWG. No. 203

IV-3. SPEAN SRAENG

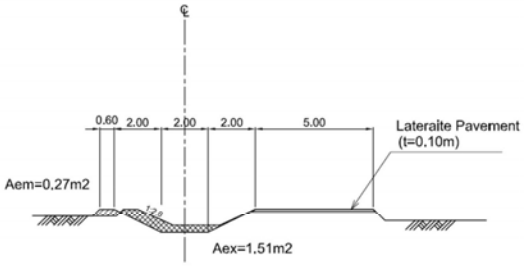

Dike (Rehabilitation)
L=14,700m
Gate
(New Construction)
W11.0mxH11.0mx1no
Labyrinth crest spillway
(Rehabilitation)
W15.0mxH4.5mx1no
Headwork (Replacement)
W13.0mx15.5mx2nos
Protection Dike
(New Construction)
L=2,500m
N
Legend
: Main canal
: Secondary canal
: Irrigation area
: Road bridge
: Intake
: Check gate
: Turnout
: Off-take
0
1
2
3
4
5 km
DATA COLLECTION SURVEY
ON IRRIGATION AND FLOOD PROTECTION
IN THE KINGDOM OF CAMBODIA
Japan International Cooperation Agency
(JICA)
Title of Drawing
Spean Sraeng Irrigation Scheme
General Plan of Canal
Date
June.2024
DWG. No.
4C1



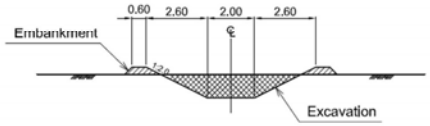
TYPICAL SECTION OF DIKE



TYPICAL SECTION OF MAIN CANAL



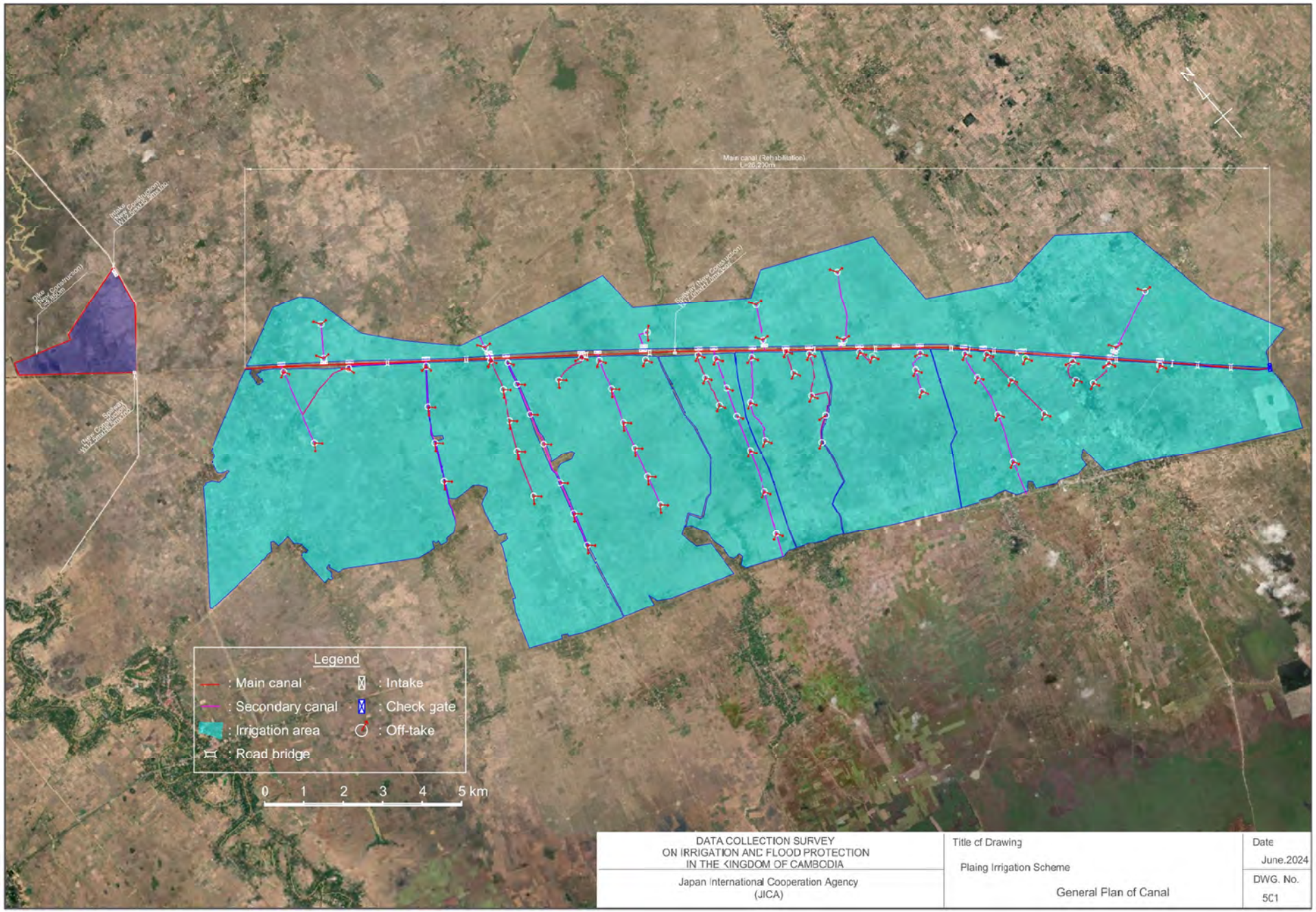
TYPICAL SECTION OF SECONDARY CANAL

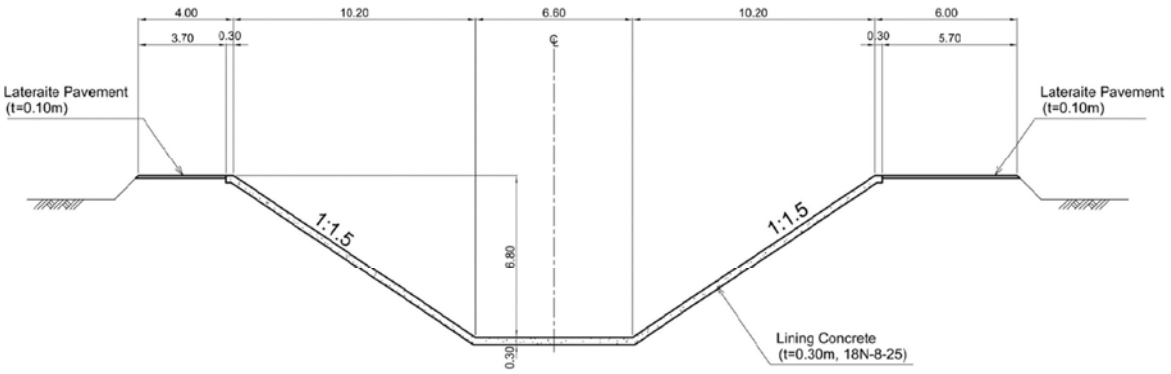


BRANCH CANAL TYPICAL CROSS SECTION

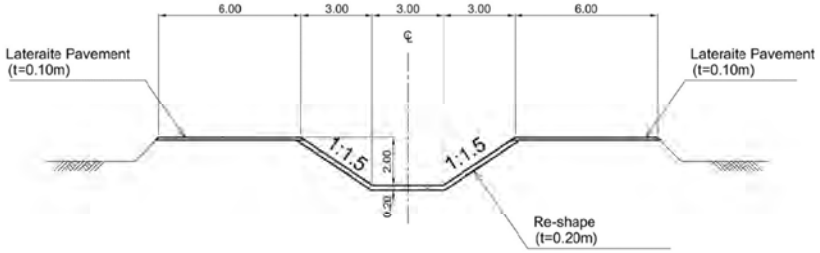
NO SCALE	DATA COLLECTION SURVEY ON IRRIGATION AND FLOOD PROTECTION IN THE KINGDOM OF CAMBODIA	TItle of Drawing	Date
	Japan International Cooperation Agency (JICA)	Spean Sraeng Irrigation Scheme **Typical Section**	June.2024
			DWG. No. 402

IV-4. PLAING

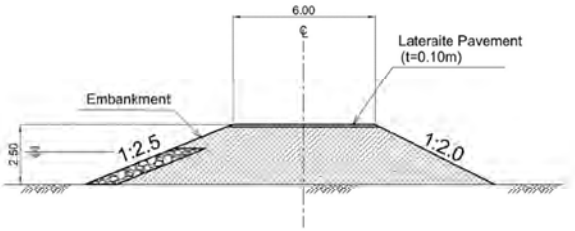

Main canal (Rehabilitation)
L=20,230m
Legend
: Main canal
: Secondary canal
: Irrigation area
: Road bridge
: Intake
: Check gate
: Off-take
0 1 2 3 4 5 km
DATA COLLECTION SURVEY
ON IRRIGATION AND FLOOD PROTECTION
IN THE KINGDOM OF CAMBODIA
Japan International Cooperation Agency
(JICA)
Title of Drawing
Plaing Irrigation Scheme
General Plan of Canal
Date
June.2024
DWG. No.
5C1



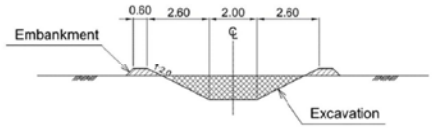
TYPICAL SECTION-MAIN CANAL



TYPICAL SECTION-SECONDARY CANAL



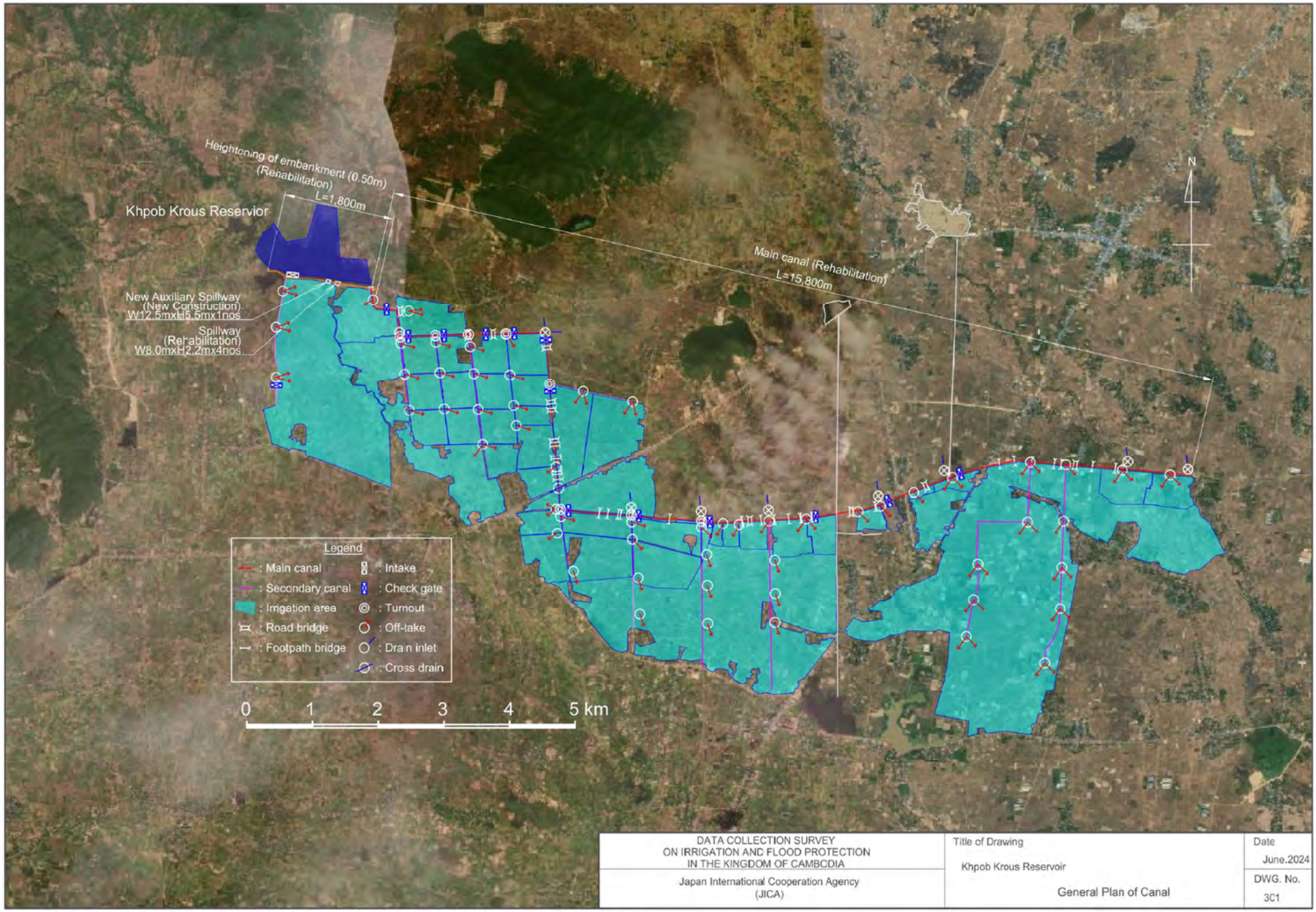
TYPICAL SECTION OF NEW DIKE

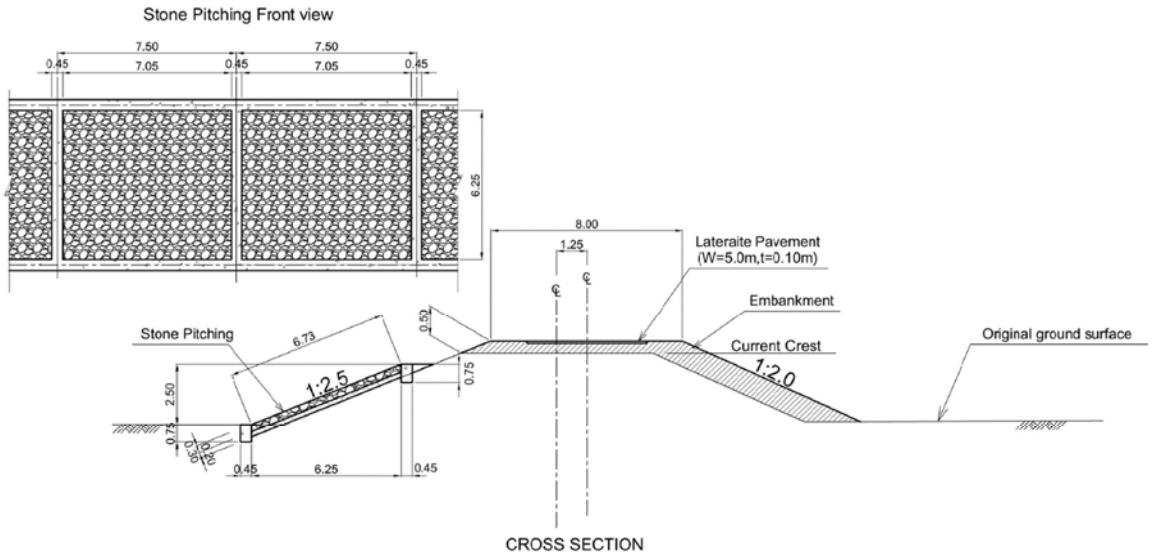


TYPICAL CROSS SECTION-BRANCH CANAL

NO SCALE	DATA COLLECTION SURVEY ON IRRIGATION AND FLOOD PROTECTION IN THE KINGDOM OF CAMBODIA	Title of Drawing	Date
	Japan International Cooperation Agency (JICA)	Plaing Irrigation Scheme **Typical Section**	June.2024
			DWG. No. 502

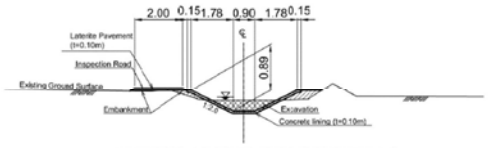
IV-5. KHPOB KROUS


Heightening of embankment (0.50m)
(Rehabilitation)
L=1,800m
Khpob Krous Reservior
Main canal (Rehabilitation)
L=15,800m
New Auxiliary Spillway
(New Construction)
W12.5mxH5.5mx1nos
Spillway
(Rehabilitation)
W8.0mxH2.2mx4nos
N
Legend
: Main canal
: Secondary canal
: Irrigation area
: Road bridge
: Footpath bridge
: Intake
: Check gate
: Turnout
: Off-take
: Dra n inlet
: Cross drain
0 1 2 3 4 5 km
DATA COLLECTION SURVEY
ON IRRIGATION AND FLOOD PROTECTION
IN THE KINGDOM OF CAMBODIA
Japan International Cooperation Agency
(JICA)
Title of Drawing
Khpob Krous Reservoir
General Plan of Canal
Date
June.2024
DWG. No.
3C1

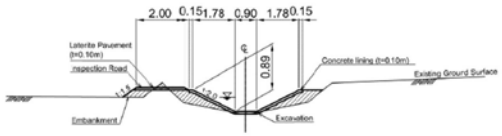


CROSS SECTION

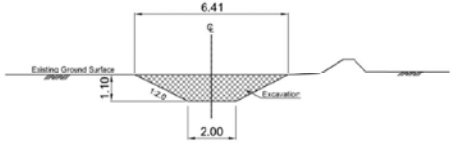
TYPICAL SECTION OF DIKE



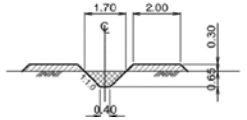
TYPICAL CROSS SECTION-TYPE I



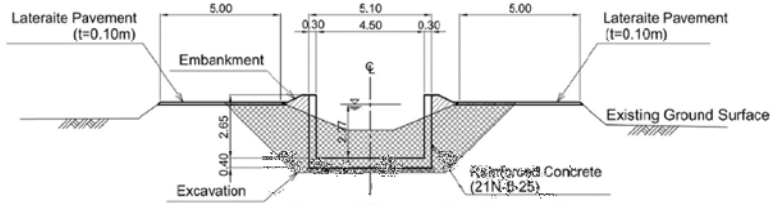
TYPICAL CROSS SECTION-TYPE II



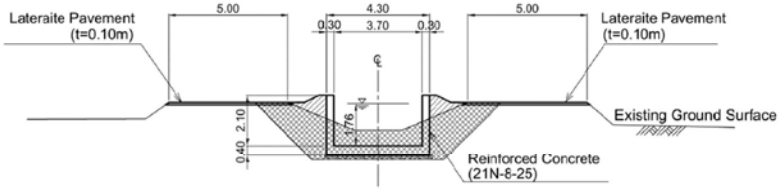
TYPICAL CROSS SECTION-DRAINAGE



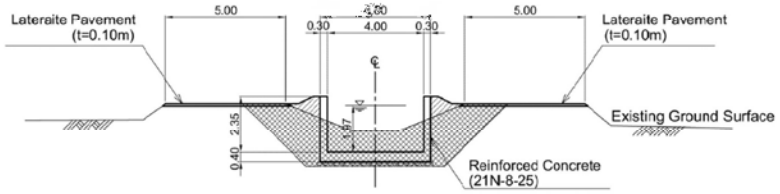
BRANCH CANAL TYPICAL CROSS SECTION



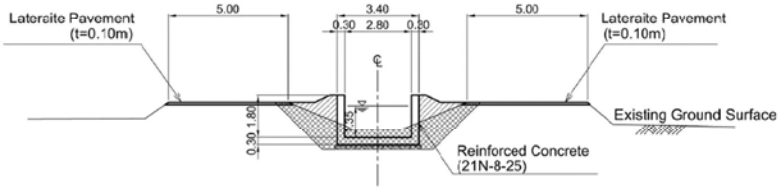
NO.35 CANAL TYPICAL CROSS SECTION; TYPE KK-1



NO.35 CANAL TYPICAL CROSS SECTION; TYPE KK-3



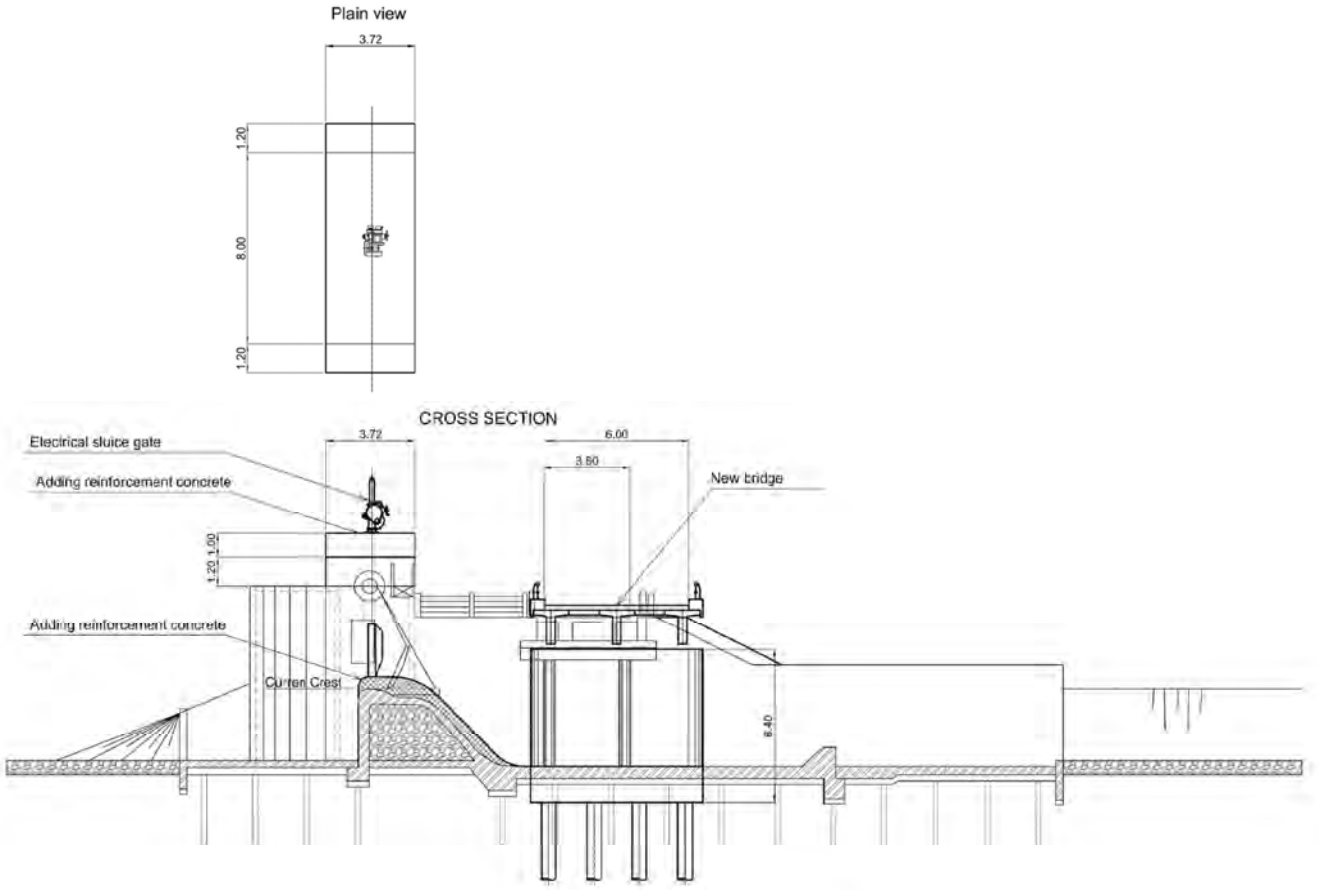
NO.35 CANAL TYPICAL CROSS SECTION; TYPE KK-2



NO.35 CANAL TYPICAL CROSS SECTION; TYPE KK-4

NO SCALE

DATA COLLECTION SURVEY ON IRRIGATION AND FLOOD PROTECTION IN THE KINGDOM OF CAMBODIA	Title of Drawing	Date
	Khpob Krous Irrigation Scheme	June.2024
Japan International Cooperation Agency (JICA)	**Typical Section**	DWG. No. 302



Rehabilitation of Spillway

NO SCALE	DATA COLLECTION SURVEY ON IRRIGATION AND FLOOD PROTECTION IN THE KINGDOM OF CAMBODIA	Title of Drawing: Khpob Krous Irrigation Scheme — **Rehabilitation of Spillway**	Date: June.2024
	Japan International Cooperation Agency (JICA)		DWG. No. 303

Appendix V

Unit Cost

Contents

V-1. Unit Cost for Main Works Items

UNIT COST FOR MAIN WORK ITEMS

ITEM	GRADE	UNIT	Spran Sraeng & Plaing		Khpob Krous	
			UNIT PRICE [US$, Riel, ¥]	REMARK	UNIT PRICE [US$, Riel, ¥]	REMARK
[Earthworks]						
Excavation	Common soil	m3	$ 4.46		$ 4.46	
Embankment	Clayly Soil	m3	$ 14.34	Transport distance=6km	$ 12.19	Transport distance=2km
Embankment	Sandy Soil	m2	$ 12.10	Transport distance=6km	$ 11.95	Transport distance=2km
Embankment Sand & Gravel	t=0.20m	m3	$ 22.53		$ 22.53	
Riprap	t=0.30m	m3	$ 38.62		$ 38.62	
Rock Embankment	d=0.3-0.8m	m3	$ 32.31		$ 32.31	
[Concrete]						
Plain concrete	Lining (t=0.2m)	m3	$ 112.01	18N	$ 112.01	18N
Reinforced concrete	21N	m3	$ 115.40	Not included formwork	$ 115.40	Not included formwork
Reinforcing bar		ton	$ 1,198.75		$ 1,198.75	
[Road]						
Asphalt	t=0.05m	m2	$ 23.40		$ 23.40	
Lateraite	t=0.10m	m2	$ 2.58		$ 2.58	
[Other cost]						
In-direct cost		%	$ 10.00		$ 10.00	
Othre cost		%	$ 5.00		$ 5.00	

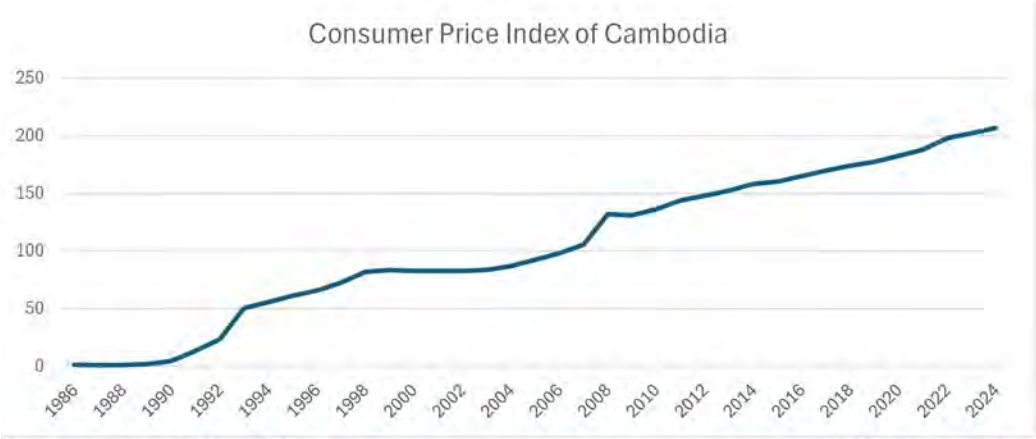
ITEM	GRADE	UNIT	Tumnup Lok		Khopb Trobek	
			UNIT PRICE [US$, Riel, ¥]	REMARK	UNIT PRICE [US$, Riel, ¥]	REMARK
[Earthworks]						
Excavation	Common soil	m3	$ 4.46		$ 4.46	
Embankment	Clayly Soil	m3	$ 11.89	Transport distance=1km	$ 20.30	Transport distance=20km
Embankment	Sandy Soil	m2	$ 11.65	Transport distance=1km	$ 11.65	Transport distance=1km
Embankment Sand & Gravel	t=0.20m	m3	$ 22.53	Transport distance=20km	$ 22.53	Transport distance=20km
Riprap	t=0.30m	m3	$ 38.62	Transport distance=20km	$ 38.62	Transport distance=20km
Rock Embankment	d=0.3-0.8m	m3	$ 32.31	Transport distance=20km	$ 32.31	Transport distance=20km
[Concrete]						
Plain concrete	Lining (t=0.2m)	m3	$ 112.01	18N	$ 112.01	18N
Reinforced concrete	21N	m3	$ 115.40	Not included formwork	$ 115.40	Not included formwork
Reinforcing bar		ton	$ 1,198.75		$ 1,198.75	
[Road]						
Asphalt	t=0.05m	m2	$ 23.40		$ 23.40	
Lateraite	t=0.10m	m2	$ 2.58		$ 2.58	
[Other cost]						
In-direct cost		%	$ 10.00		$ 10.00	
Othre cost		%	$ 5.00		$ 5.00	

V-2. Unit Cost for Structure Works

UNIT COST FOR STRUCTURE WORKS

Item No.	Description	Unit	2012 Unit price(US$)	2024 Unit price(US$)
1	Construction of new Sub canal (Combined unit price)	ha	275.39	384. 72
2	Rehabilitation of Sub canal (Combined unit price)	ha	168.36	235. 20
3	Diversion structure on main canal	no	22,411.17	31, 308. 40
4	Diversion structure on secondary canal	no	8,005.95	11, 184. 31
5	Box culvert (2 m x 1.5 m x 6 m) on main canal	no	13,303.64	18, 585. 19
6	Cross drain on secondary canal	no	4,718.42	6, 591. 63
7	Off-take Type-1 for main canal (Q > 0.2 m^3/sec)	no	1,493.61	2, 086. 57
8	Off-take Type-2 for main canal (Q < 0.2 m^3/sec)	no	1,970.36	2, 752. 59
9	Check structure on main canal, replacement with new	no	91,906.93	128, 393. 98
10	Check structure on main canal, new	no	84,669.76	118, 283. 65
11	Turnout, replacement with new	no	4,044.80	5, 650. 59
12	Turnout, new	no	3,793.82	5, 299. 97
13	Construction of bridge with demolition of existing bridge	no	36,634.41	51, 178. 27
14	Construction of new Bridge	no	33,248.47	46, 448. 11
15	Construction of foot bridge	no	13,331.72	18, 624. 41
16	Drainage inlet	no	904.75	1, 263. 94
17	Check structure Type A1 (Q > 1 m^3/sec)	no	6,659.80	9, 303. 74
18	Check structure Type A2 (0.4 <Q < 1 m^3/sec)	no	3,322.06	4, 640. 92
19	Check structure Type A3 (Q < 0.4 m^3/sec)	no	2,493.47	3, 483. 38
20	Check structure with drop Type B1 (Q > 1 m^3/sec)	no	9,577.34	13, 379. 54
21	Check structure with drop Type B2 (0.4 <Q < 1 m^3/sec)	no	5,244.31	7, 326. 30
22	Check structure with drop Type B3 (Q < 0.4 m^3/sec)	no	3,937.27	5, 500. 37
23	Drop	no	3,569.70	4, 986. 87
24	Turnout, road side without foot bridge Type A1 (0.2 < Q < 0.5 m^3/sec)	no	5,134.48	7, 172. 87
25	Turnout, road side without foot bridge Type A2 (Q < 0.2 m^3/sec)	no	3,363.88	4, 699. 34
26	Turnout, bank side with foot bridge Type B1 (0.2 < Q < 0.5 m^3/sec)	no	5,527.88	7, 722. 45
27	Turnout, bank side with foot bridge Type B2 (Q < 0.2 m^3/sec)	no	3,576.17	4, 995. 91
28	Culvert, Type A1 (box Q > 2 m^3/sec)	no	17,017.98	23, 774. 12
29	Culvert, Type B1 (pipe Q > 1 m^3/sec)	no	3,202.83	4, 474. 35
30	Culvert, Type B2 (pipe Q < 1 m^3/sec)	no	1,525.10	2, 130. 56
31	Culvert for access to house, Type C (pipe)	no	931.73	1, 301. 63
32	Road bridge (Q > 1 m^3/sec)	no	31,816.58	44, 447. 76
33	Foot bridge	no	6,232.58	8, 706. 91
34	Cross drain on main canal	no	13,329.56	18, 621. 40
	Spean Sraeng			
35	Road bridge W5.0mxL20.0m	no		120, 000. 00
36	Generator 25KVA	LS		7, 590. 00
	Plain			
37	Generator 100KVA	LS		17, 040. 00
	Tumnup Lok Reservoir & Kopb Trobek Reservoir			
38	Dike Rehabilitation	LS	756,074.00	1, 056, 235. 38
39	Spillway	LS	715,642.00	999, 751. 87
40	Flap Gate	LS		161, 000. 00
40	Generator 45KVA	LS		10, 005. 00
40	Syphon	LS	128,136.00	125, 304. 19
41	Maintenance Gate	LS	44,171.00	105, 477. 00
42	Intake Structure for Diversion Canal	LS	42,882.00	59, 906. 15
43	Intake Gate to Tertiary Block (1 no.) Off-take	no	18,046.00	25, 210. 26
44	Demolition of existing structure	no	7,967.00	11, 129. 90
45	Miscellanies	no	79,365.00	110, 872. 91
46	Diversion canal Structures	no	128,136.00	179, 005. 99
47	Construction of Sub-project Office	LS	241,700.00	337, 654. 90
48	Road bridge W5.0mxL3.0m	no		18, 000. 00
49	Footpath bridge W1.0mxL3.0m	no		3, 600. 00
	Khopb Krous Reservoir			
50	Flap Gate	LS		161, 000. 00
51	Generator 25KVA	LS		7, 590. 00
52	Check structure, Type A1	no	6,660.00	9, 304. 02
53	Turnout, Type A1	no	5,134.00	7, 172. 20
54	Road bridge	no	31,817.00	44, 448. 35
55	Road bridge W5.0mxL5.0m	no		30, 000. 00
56	Footpath bridge	no	6,233.00	8, 707. 50
57	Footpath bridge W1.0mxL5.0m	no		6, 000. 00
58	Cross drain	no	13,330.00	18, 622. 01
59	Construction of Sub-project Office	LS	241,700.00	337, 654. 90
60	Rise up of Sipllway (Rehabilitation)	LS		7, 091, 470. 00
	Common			
61	Sub canal-Spran Sraeng & Plaing	ha		54. 00
62	Sub canal-Khpob Krous	ha		48. 00
63	Sub canal-Tumnup Lok	ha		47. 00
64	Sub canal-Khopb Trobek	ha		74. 00
65	Off-take	ha		66. 00

V-3. Others



Consumer Price Index of Cambodia UNIT: index number

1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
n/a	n/a	n/a	n/a	n/a	n/a	1.379	0.948	1.166	1.911
1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
4.62	13.444	23.526	50.421	55.685	61.297	65.678	72.576	81.937	83.573
2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
82.883	82.786	82.756	83.606	86.887	92.404	98.08	105.601	131.999	131.124
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
136.365	143.838	148.056	152.415	158.288	160.211	165.073	169.87	174.049	177.432
2020	2021	2022	2023	2024					
182.645	187.981	197.995	202.238	206.824					

NOTE: 1) 206.824 is the estimated figure in 2024.
2) Base year = 100, annual average value
Source: IMF - World Economic Outlook Databases (2024 April)

Ratio = Value of 2024 / Value of 2012
= 206.824 / 148.056
= 1.397

Power Supply Generator Price (UNIT: US$)

Total Cost=1.2xSub Total Cost

Project	Province	Capacity	Power Supply frequency	Voltage	Price	Transportation	Store house	Sub Total Coat	Total Cost
Spean Sraeng Irrigation	Banteay Meanchey	13KVA	50HZ	220v	5,004	150	33,000	5,154	6,185
		25KVA	50HZ	220v	6,075	250	33,000	6,325	7,590
		45KVA	50HZ	220v	7,837	500	33,000	8,337	10,005
		60KVA	50HZ	220v	9,585	500	33,000	10,085	12,102
		90KVA	50HZ	220v	11,340	500	33,000	11,840	14,208
		100KVA	50HZ	220v	13,500	700	33,000	14,200	17,040
		150KVA	50HZ	220v	16,875	700	33,000	17,575	21,090
Plaing Irrigation	Siem Reap	13KVA	50HZ	220v	5,004	150	33,000	5,154	6,185
		25KVA	50HZ	220v	6,075	250	33,000	6,325	7,590
		45KVA	50HZ	220v	7,837	500	33,000	8,337	10,005
		60KVA	50HZ	220v	9,585	500	33,000	10,085	12,102
		90KVA	50HZ	220v	11,340	500	33,000	11,840	14,208
		100KVA	50HZ	220v	13,500	700	33,000	14,200	17,040
		150KVA	50HZ	220v	16,875	700	33,000	17,575	21,090
Khopb Krous Irrigation	Kampong Speu	13KVA	50HZ	220v	5,004	150	33,000	5,154	6,185
		25KVA	50HZ	220v	6,075	250	33,000	6,325	7,590
		45KVA	50HZ	220v	7,837	500	33,000	8,337	10,005
		60KVA	50HZ	220v	9,585	500	33,000	10,085	12,102
		90KVA	50HZ	220v	11,340	500	33,000	11,840	14,208
		100KVA	50HZ	220v	13,500	700	33,000	14,200	17,040
		150KVA	50HZ	220v	16,875	700	33,000	17,575	21,090
Tumnup Lok Irrigation	Takeo	13KVA	50HZ	220v	5,004	150	33,000	5,154	6,185
		25KVA	50HZ	220v	6,075	250	33,000	6,325	7,590
		45KVA	50HZ	220v	7,837	500	33,000	8,337	10,005
		60KVA	50HZ	220v	9,585	500	33,000	10,085	12,102
		90KVA	50HZ	220v	11,340	500	33,000	11,840	14,208
		100KVA	50HZ	220v	13,500	700	33,000	14,200	17,040
		150KVA	50HZ	220v	16,875	700	33,000	17,575	21,090
Khopb Trobek Irrigation	Takeo	13KVA	50HZ	220v	5,004	150	33,000	5,154	6,185
		25KVA	50HZ	220v	6,075	250	33,000	6,325	7,590
		45KVA	50HZ	220v	7,837	500	33,000	8,337	10,005
		60KVA	50HZ	220v	9,585	500	33,000	10,085	12,102
		90KVA	50HZ	220v	11,340	500	33,000	11,840	14,208
		100KVA	50HZ	220v	13,500	700	33,000	14,200	17,040
		150KVA	50HZ	220v	16,875	700	33,000	17,575	21,090