JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

MINISTRY OF SETTLEMENT AND REGIONAL DEVELOPMENT
THE REPUBLIC OF INDONESIA

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

FINAL REPORT

COMPONENT A:
WEST CISANGKA / CABANG RIVER IMPROVEMENT

VOLUME III DESIGN NOTES

AUGUST 2000

CTI ENGINEERING INTERNATIONAL CO., LTD.
IN ASSOCIATION WITH
PACIFIC CONSULTANTS INTERNATIONAL
AND
PASCO INTERNATIONAL INC.

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CONSTITUTION OF THE REPORT

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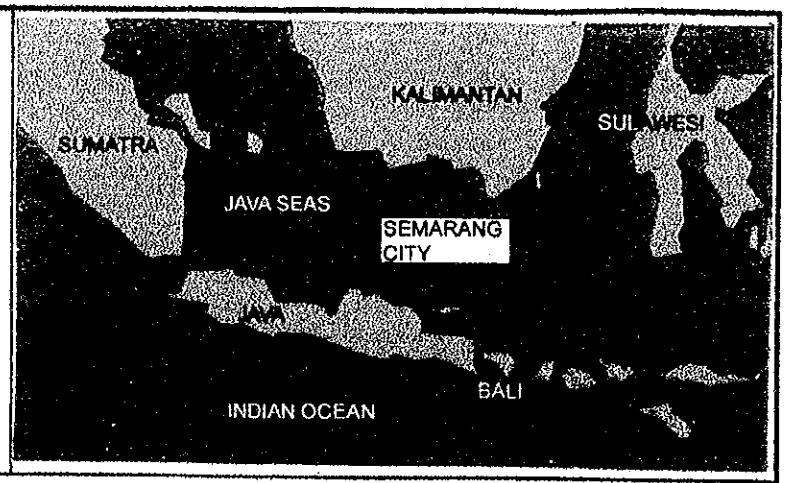

SCALE

0 10 20 30 40 50 km

JAVA SEA

SEMARANG CITY

WEST FLOODWAY

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GARANG RIVER BASIN

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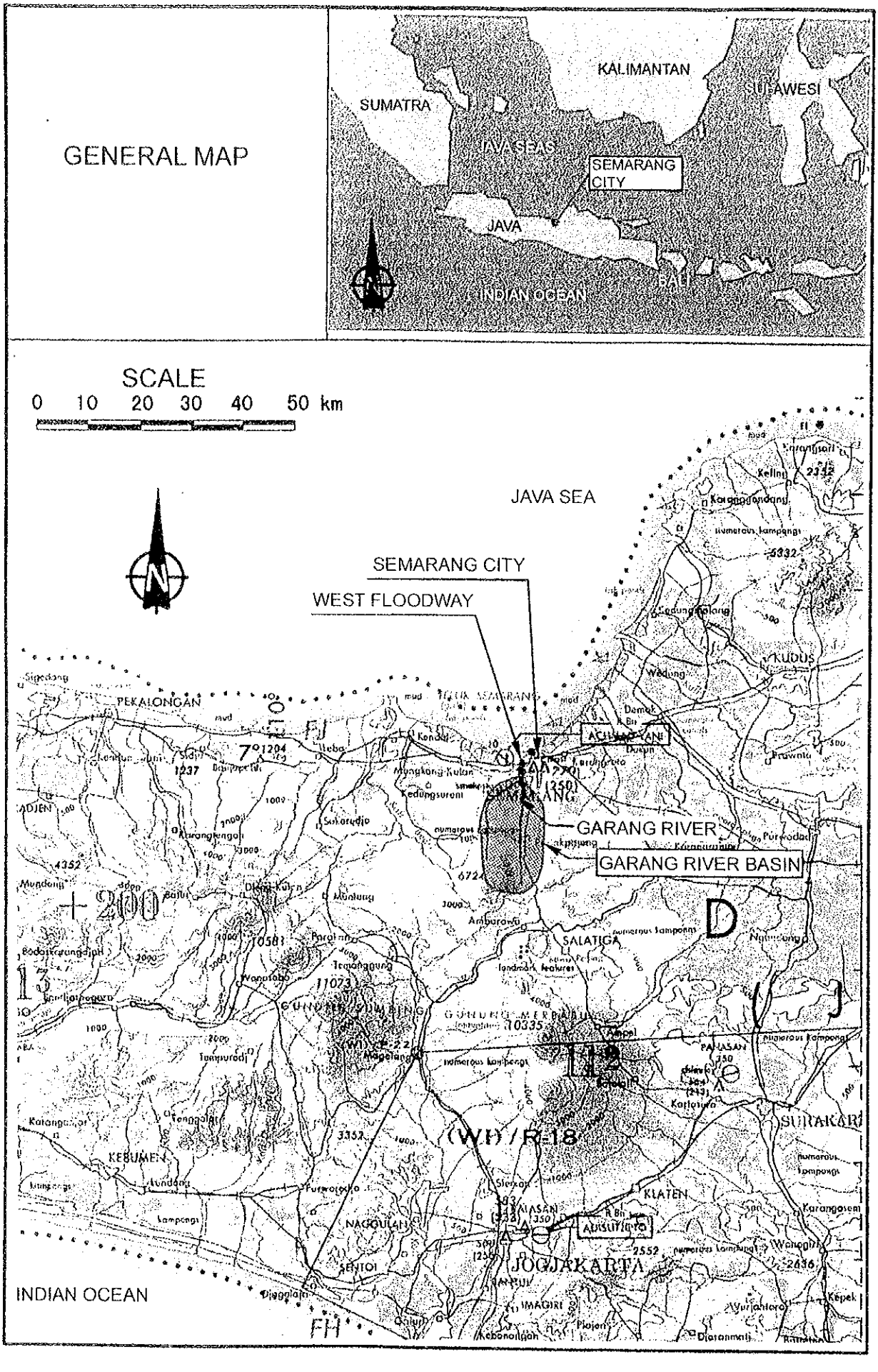
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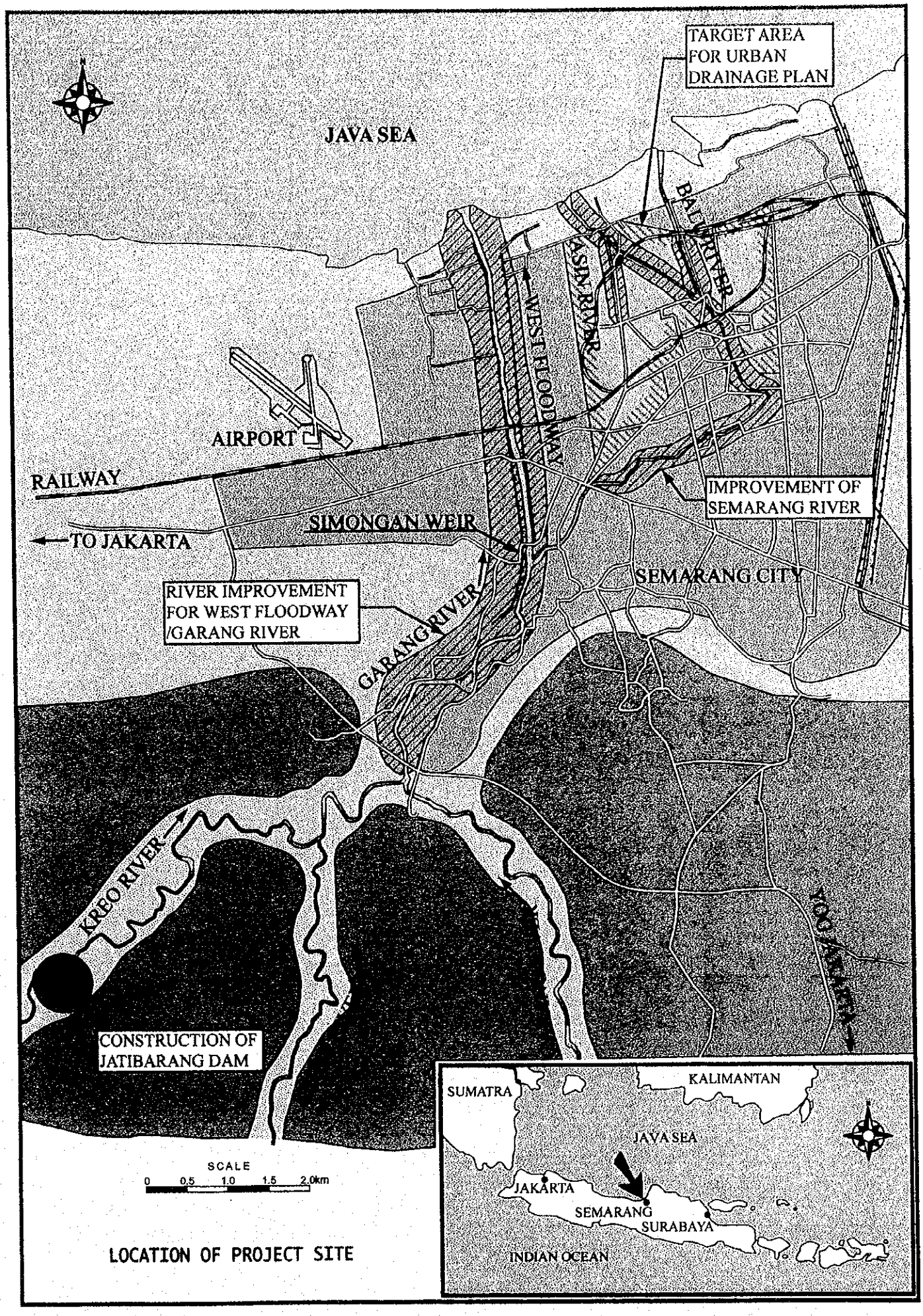
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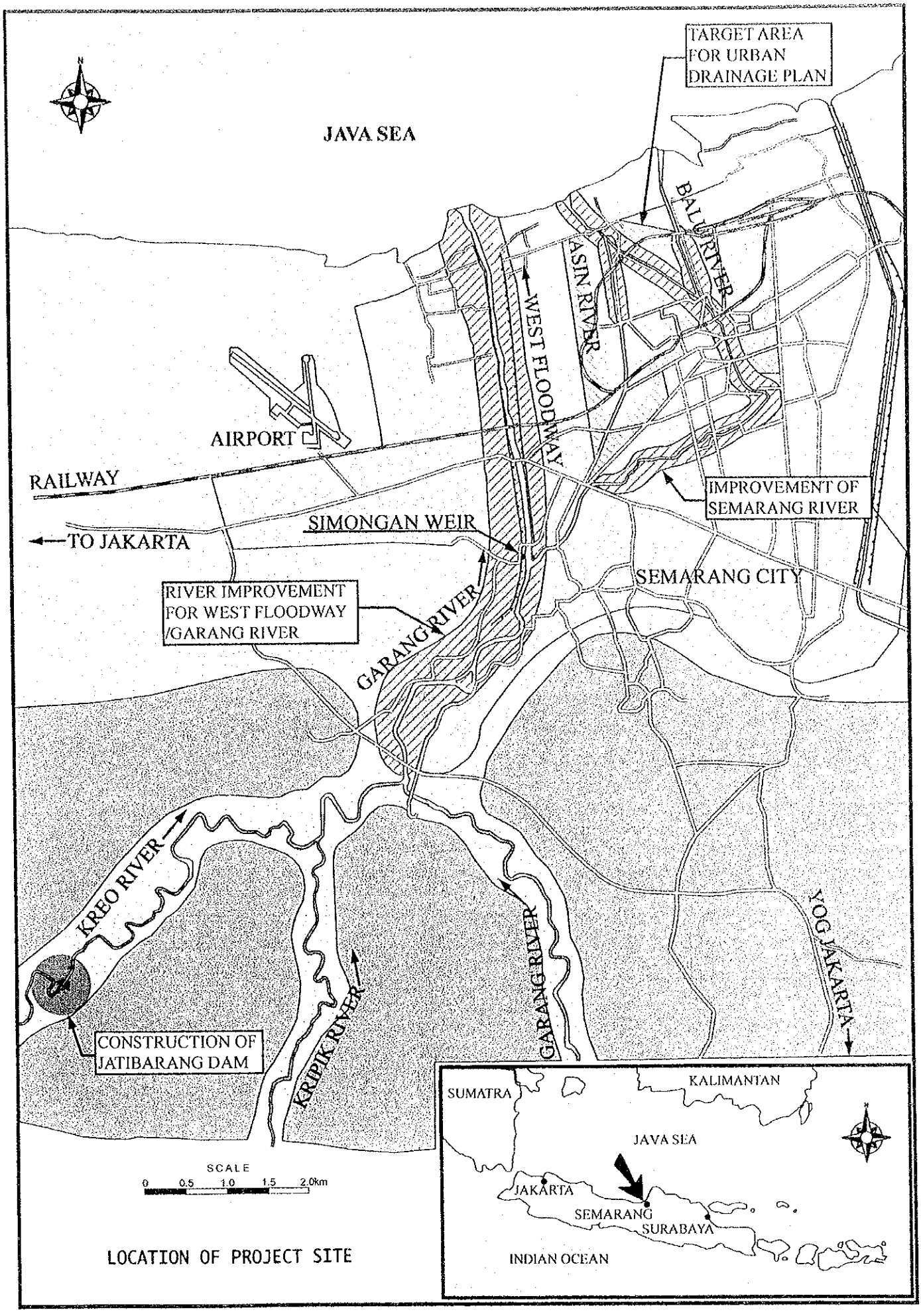

LOCATION OF PROJECT SITE

VOLUME III DESIGN NOTES

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CHAPTER 1 INTRODUCTION

1.1 River Improvement and Reconstruction of Simongan Weir

(1) Flood Control Scheme

The flood control for Garang River/West Floodway is carried out by two schemes, namely, the improvement of West Floodway/Garang River for the stretch of 9.78 km from the river mouth to the confluence with Kreo River including the reconstruction of Simongan Weir, and the construction of Jatibarang Multipurpose Dam on Kreo River located 13 km upstream from the confluence.

(2) River Stretch to be Improved

The flood control works are executed to protect the river stretch of 9.78 km in total length starting from the river mouth up to the confluence with Kreo River. The uppermost point for river improvement is placed on the newly constructed bridge 300 m upstream from the confluence. The project area is administratively covered by Kec. Semarang Barat in Semarang City, Central Java Province.

(3) Flood Control Scale

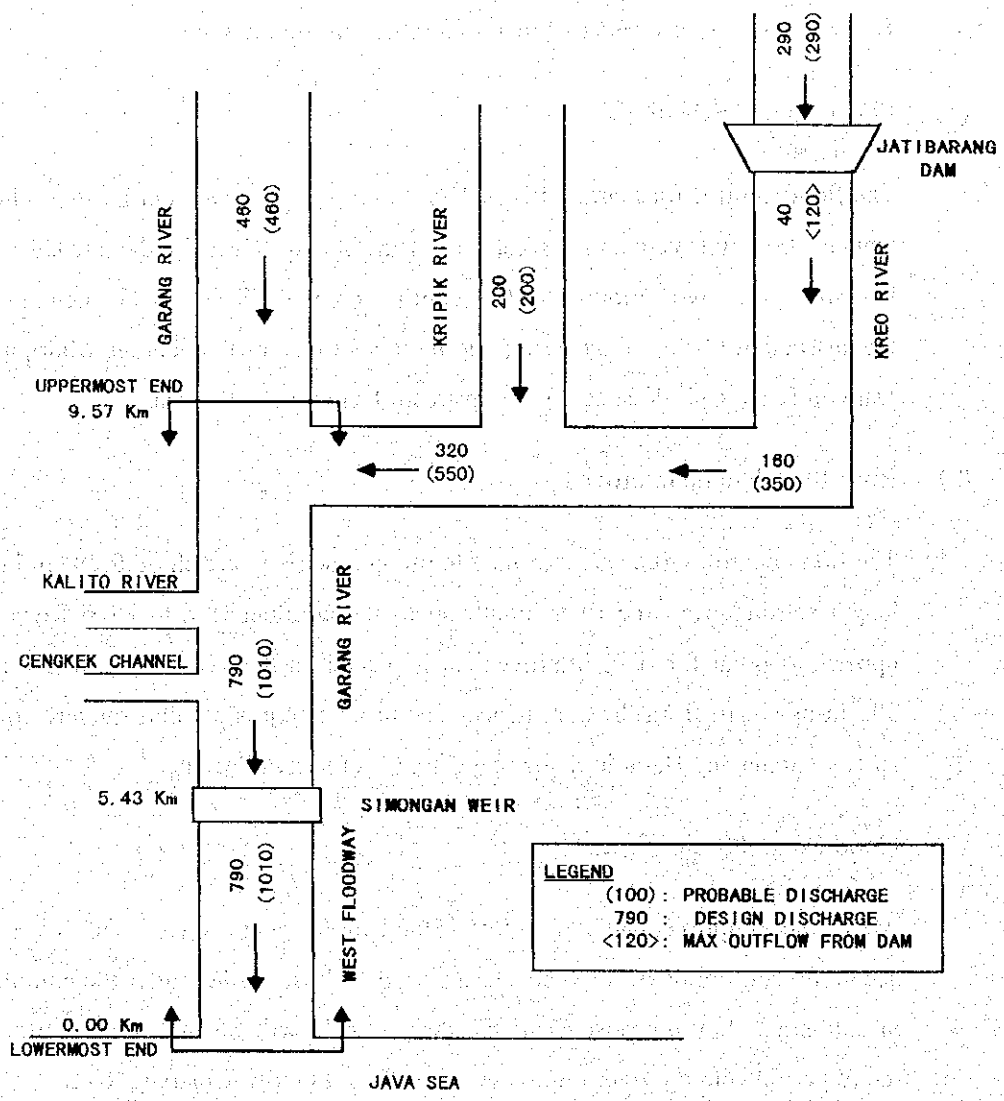
After the improvement of West Floodway/Garang River, the river can accommodate floods of 25-year return period or less. Further, after the completion of Jatibarang Multipurpose Dam the design scale will be increased to 100-year return period with the river improvement of West Floodway/Garang River.

(4) Design Flood Discharge

In accordance with the proposed flood control scale as well as updated probable flood discharges in Garang river system, the design flood discharge for the river improvement has been determined as graphically shown below.

DISTRIBUTION OF DESIGN FLOOD DISCHARGE

Unit : m^3/s



The standard flood discharge of 1,010 m^3/s in the downstream from the confluence is reduced to 790 m^3/s by flood control effect of Jatibarang Multipurpose Dam. The discharge of 790 m^3/s corresponds to a 25-year probable flood discharge before Jatibarang Dam is constructed.

Return Period	Standard Flood Discharge at Simongan Weir	Design Flood Discharge at Simongan Weir *1
100 year	1,010 m^3/s	790 m^3/s
50 year	900 m^3/s	700 m^3/s
25 year	790 m^3/s	620 m^3/s

*1 : Flood control by Jatibarang Dam is considered.

The design discharge of 790 m^3/s is applied to the river improvement of river stretches from the river mouth up to the confluence with Kreo River.

(5) Project Works

River improvement of West Floodway/Garang River is projected for the following purposes.

(a) To increase the flow capacity of river channel and to prevent flood overflow from river banks/dikes particularly in West Floodway,

(b) To make the flood water level below the hinterland ground level in Garang River,

(c) To eliminate the dam-up effect of flowing water owing to the existing fixed type Simongan Weir.

To attain these purposes, the following major works have been proposed.

Project Works	River Stretch/Location
1. West Floodway Improvement	L = 5,530 m
- Dredging of downstream channel	L = 1,390 m
- Excavation of existing floodplain	L = 4,260 m
- Raising/Reinforcing of Existing Floodwall	L = 2,530 m
- Embankment for dike in river mouth area	L = 720 m
2. Garang River Improvement	L = 4,050 m
- Riverbed Excavation	L = 1,050 m
- Excavation of existing floodplain	L = 2,560 m
3. Reconstruction of Simongan Weir	L = 200 m
- Gated Weir	5.43 km from river mouth
- Intake Structure	

For stabilizing the river channel excavated, river structures such as ground sill, revetment and groin are provided properly as well. As supplementary works, the existing drainage and intake structures, and bridges which may be affected by the river improvement, will be re-constructed or reinforced to maintain their existing functions. Besides, in view of maintenance and use of river channel and structures, and preservation of river environment, waterfront and environmental related facilities are provided as required.

1.2 Scope of Design Works

The detailed design is done for the following major work items.

(1) River Improvement Works

West Floodway Improvement

	Work Item
1	Widening of Low Water Channel
2	Earth Dike
3	Raising of Existing Floodwall
4	Revetment
	- Wet stone masonry on riverbank slope
	- PC sheet pile wall type revetment
	- Leaning wall (Concrete type)
	- Leaning wall (Wet stone masonry type)
	- Earth retaining wall
5	Raising of Railway Bridge
6	Protection Works for Bridge Pier
7	Drainage Outlet with Gate
	- Steel Flap Gate, 0.7 m x 1.1 m
	- Steel Flap Gate, 0.8 m x 1.4 m
	- Steel Flap Gate, 1.0 m x 1.0 m
	- Steel Flap Gate, 0.9 m x 1.1 m
	- Wooden Stop Log
8	River Amenity and Maintenance Facilities
	- Approach Steps
	- Mooring Facilities
	- Walk Way, Gravel pavement t=150 b=3.0 m
	- Tree Planting

Garang River Improvement

	Work Item
1	Excavation of Low Water Channel
2	Earth Dike
3	Floodwall (Gravity Type)
4	Protection Works for Riverbank and Riverbed
	- Wet stone masonry on riverbank slope
	- PC sheet pile wall type revetment
	- Leaning wall (Concrete type)
	- Leaning wall (Wet stone masonry type)
	- Earth retaining wall
	- Groin
5	Ground Sill
	- Ground Sill with Head (WF124)
	- Ground Sill (WF173)
6	Protection Works for Bridge Pier
7	Drainage Sluiceway and Channel
8	Drainage Outlet with Gate
	- Steel Flap Gate, 0.7 m x 1.1 m
	- Steel Flap Gate, 0.8 m x 1.4 m
	- Steel Flap Gate, 1.0 m x 1.0 m
	- Steel Flap Gate, 0.9 m x 1.1 m
	- Wooden Stop Log
9	River Amenity and Maintenance Facilities
	- Approach Steps,
	- Walk Way, Gravel pavement t=150 b=3.0 m
	- Water Level Gauging Station
	- Tree Planting

(2) Simongan Weir

Weir Structure

Item	Dimension
- Number of pier	Center pier : 4, End pier : 2
- Center pier	
Length (flow direction)	16.5 m
Width (right angle to flow)	2.5 m x 4 units
Height	14.1 m
Footing	18.5 m x 8.0 m x 2.2/1.6 m
- End pier	
Length (flow direction)	16.5 m
Width (right angle to flow)	2.00 m x 2 units
Height	14.1 m
Footing	18.5 m x 15.0 m x 2.2/1.6 m
- Gate floor slab	18.5 m x 13.0 m x 2.0/1.4 m
- Stilling basin	L=20.0 m, Depth=0.6 m
- Concrete apron (Downstream-1)	76.5m x 15.0m x 1.2m
- Concrete apron (Downstream-2)	79.5m x 10.0m x 1.0m
- Concrete apron (Upstream)	76.5m x 10.0m x 7.5m
- Approach wall (Downstream-1)	H=9.1m, L=15.0m
- Approach wall (Downstream-2)	H=7.5m, L=10.0m
- Approach wall (Upstream)	H=8.5m, L=15.0m
- Deck of Control House	6.7m x 6.7m x 2units, 13.05m x 6.70m x 2units

Gate

Item	Dimension
- Flood discharge gate	3 gates
Gate type	Shell type steel roller gate
Height	3.70 m
Clear span length	18.50 m
- Sediment discharge gate	2 gates
Gate type	Girder type steel roller gate
Height	4.35 m
Clear span length	5.50 m
- Right intake gate	for Semarang River
Gate type	Steel slide gate
Dimension	H=2.0m x W=2.25m x 4
Water intake	0.50 m^3/s
- Left intake gate	for Irrigation Channel
Gate type	Steel slide gate
Dimension	H=2.0m x W=2.00m x 2
Water intake	0.15 m^3/s

Right Bank Intake Structure

Location (Center Line)	17.50 m upstream from the edge of pier footing
Clear Span of Gate	H=2.25 m x W=2.0 m – four (4) gates
Structural Component	Gate pier, Operation deck, Box culvert, Breast wall, Apron, Connecting wall, Foundation pile, Sheet pile
Dimension of sluice	Box Culvert : Width = 13.05 m, Length = 7.00 m Apron : Width = 13.05 m, Length = 3.675 m Breast Wall : Width = 3.475 m, Height =5.20 m
Foundation Structure	Prestrresed Concrete Pile, Dia.350 (A), Length 15.0 m
Seepage Block Structure	Steel sheet pile, type-II, L = 6.0 m

Left Bank Intake Structure

Location (Center Line)	13.70 m upstream from the edge of pier footing (WF.99+39.00 m)
Clear Span of Gate	2.0 m x 2.0 m – two (2) gates
Structural Component	Gate pier, Operation deck, Box culvert, Breast wall, Apron, Connecting wall, Foundation pile, Sheet pile
Dimension of sluice	Box Culvert : Width = 6.35 m, Length = 7.00 m Apron : Width = 6.35 m, Length = 3.675 m Wing Wall : Width = 3.025 m, Height =5.15 m
Foundation Structure	Prestrresed Concrete Pile, Dia.350 (A), Length 14.0m
Seepage Block Structure	Steel sheet pile, type-II, L = 6.0 m

1.3 Design Criteria

The planning/design criteria are prepared to serve the hydraulic and structural design of river improvement works and flood control structures for the project. The basic concepts and procedures for the planning and designing are based mainly on the "Flood Control Manual" prepared by the Ministry of Public Works, Government of Indonesia. As well as the "Technical Standard of River and Sabo Works" by the Ministry of Construction, Government of Japan, is used to supplement the said "Flood Control Manual". The other standards/codes pertaining to the specific flood control structures are also used as required.

In this section, planning/design criteria focusing on hydraulic design of river structures are presented. In addition, the results of geological survey and soil mechanical tests conducted in the previous survey stage are presented.

For the structural design, "Design Criteria Report, Volume-1" should be referred.

CHAPTER 2 HYDRAULIC ANALYSIS

2.1 River Flow Capacity

The flow capacity of the existing channel is estimated for West Floodway and Garang River by the non-uniform flow calculation method using the results of the channel survey conducted in 1997 under the JICA Study Team. Furthermore, the water level profile under probable floods is estimated as well.

2.1.1 Conditions on Calculation

Newly surveyed channel cross sections were used for the calculation. The other necessary conditions for the non-uniform calculation are as follows:

Return Period (year)	Probable Discharge (m^3/s)	Water Level *1		Manning's Roughness Coefficient *4
		River *2 Mouth (EL. m)	Simongan *3 Weir (EL. m)	
100	1010	0.25	9.30	0.035
25	790	0.25	8.51	0.035
10	640	0.25	8.25	0.035

*1 All elevations are based on the datum of TTG (Mean Sea Level at Tanjung Priok in Jakarta.

*2 Mean high water level (MHWL) observed at Semarang Harbor in 1997 (refer to " Plan for River Channel, Baisic Design")

*3 Waterhead of overflow discharge at the weir. (Refer to)

*4 This is defined as the average figure of the entire channel section.

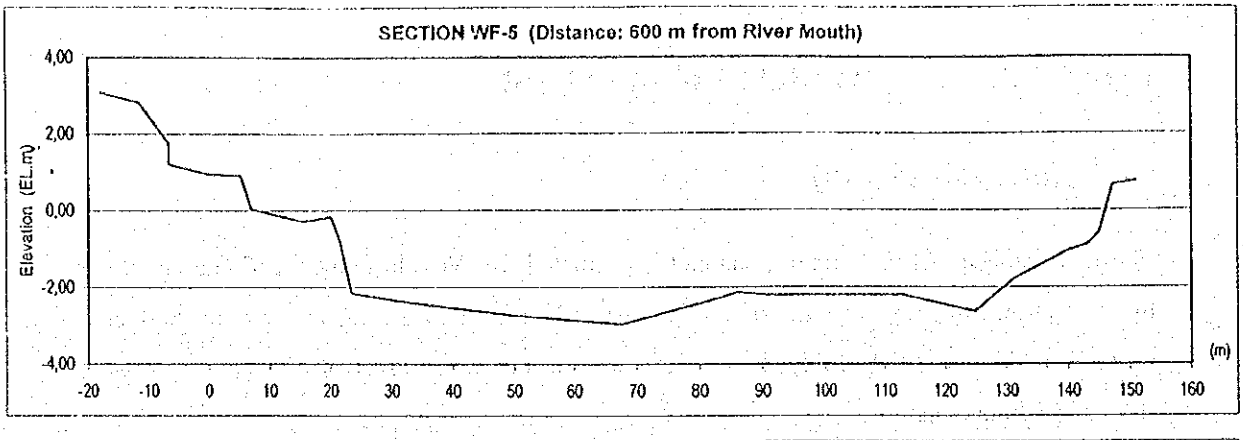
2.1.2 West Floodway

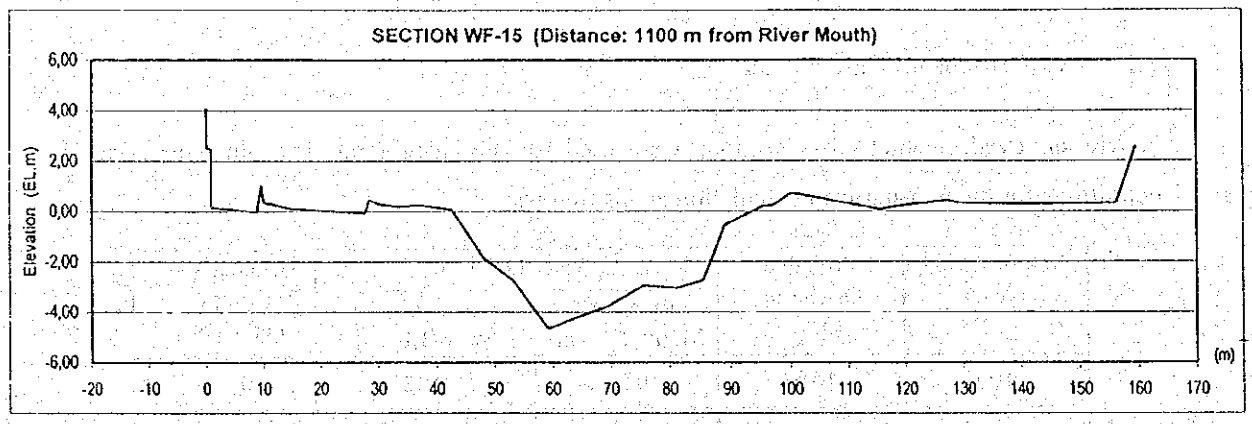
(1) River Cross Sections

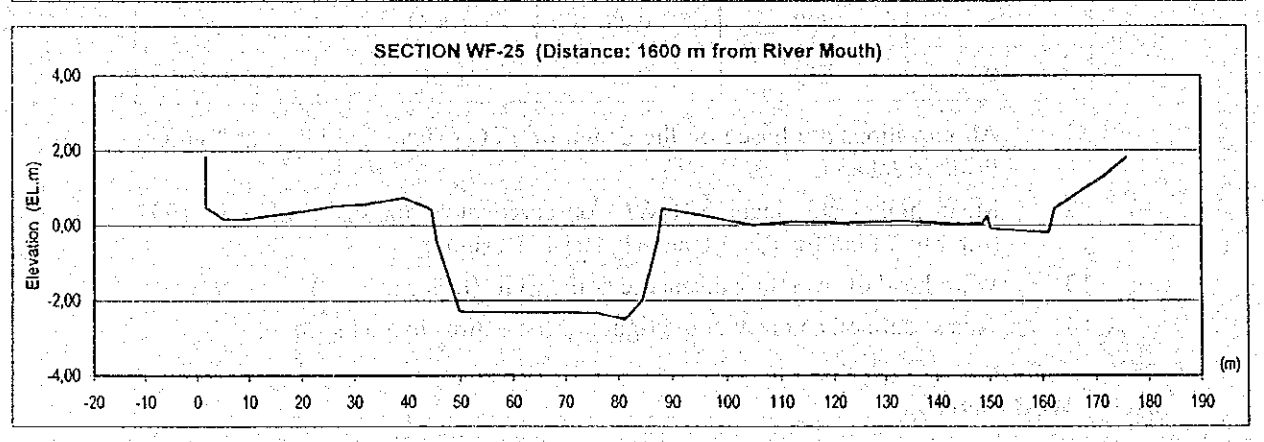
The typical cross sections of West Floodway are shown in the following figures.

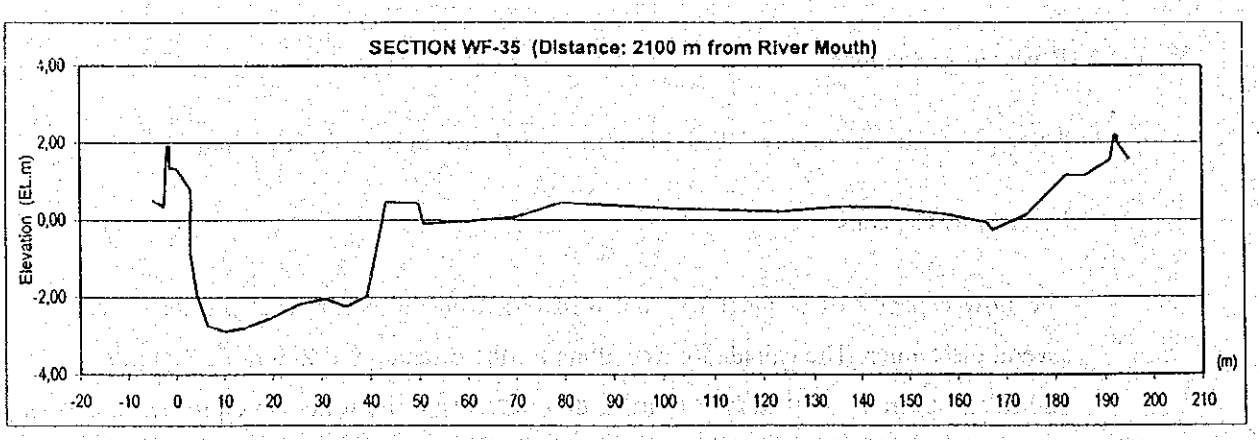
(2) River Flow Capacity

The flow capacity of channel was obtained based on the water level profile under several discharges. The calculation was done for the discharge of 200 m^3/s, 300 m^3/s, 400 m^3/s, 500 m^3/s, 600 m^3/s, 700 m^3/s, 800 m^3/s. And, the water flow profiles and the chart of the flow capacity are shown in the following sheets. The channel flow capacity for the full section up to dike/riverbank crown of West Floodway is presented in the following figure.









THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig.
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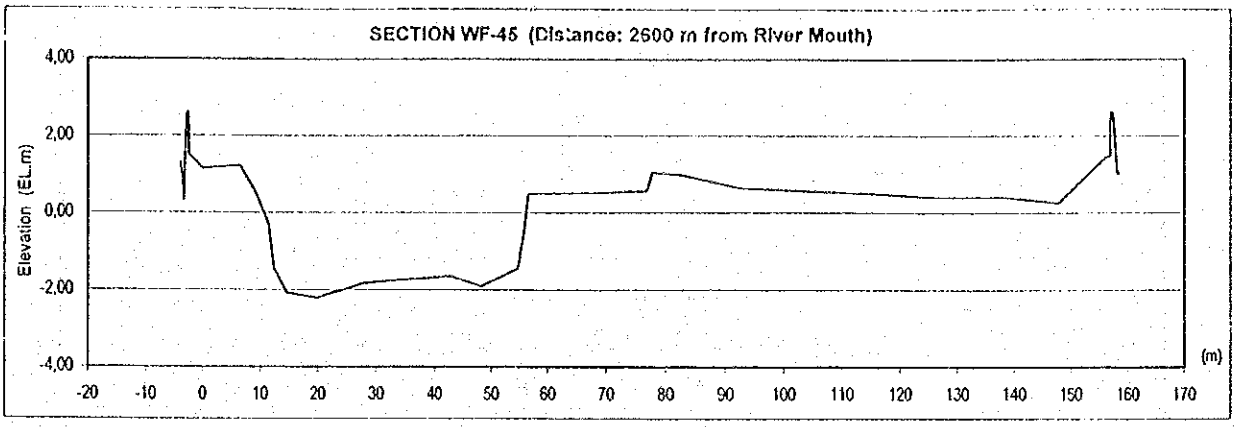

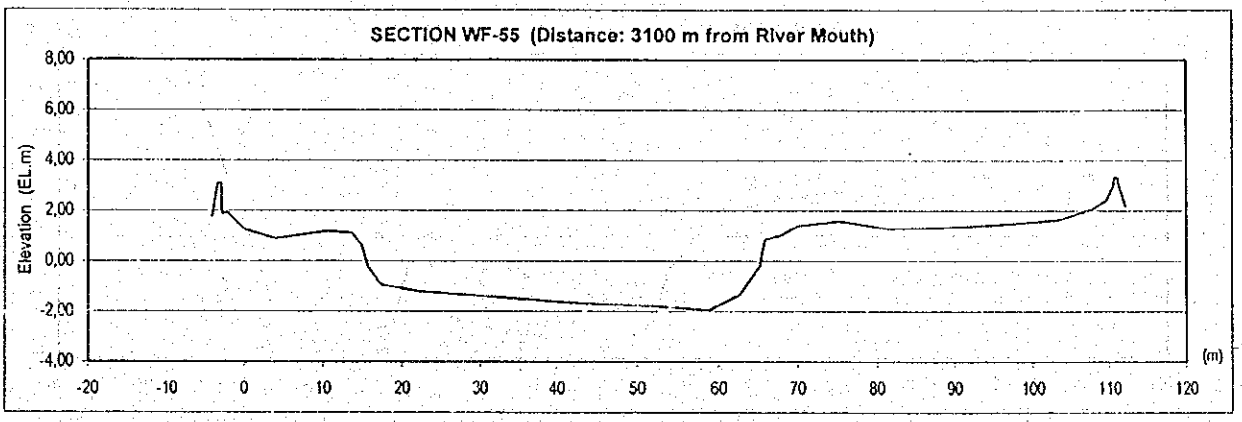

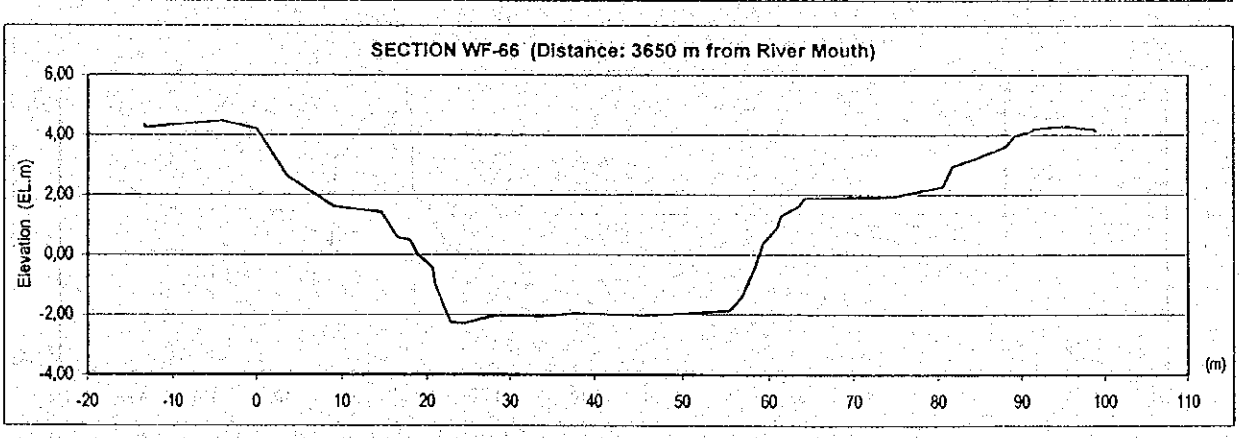

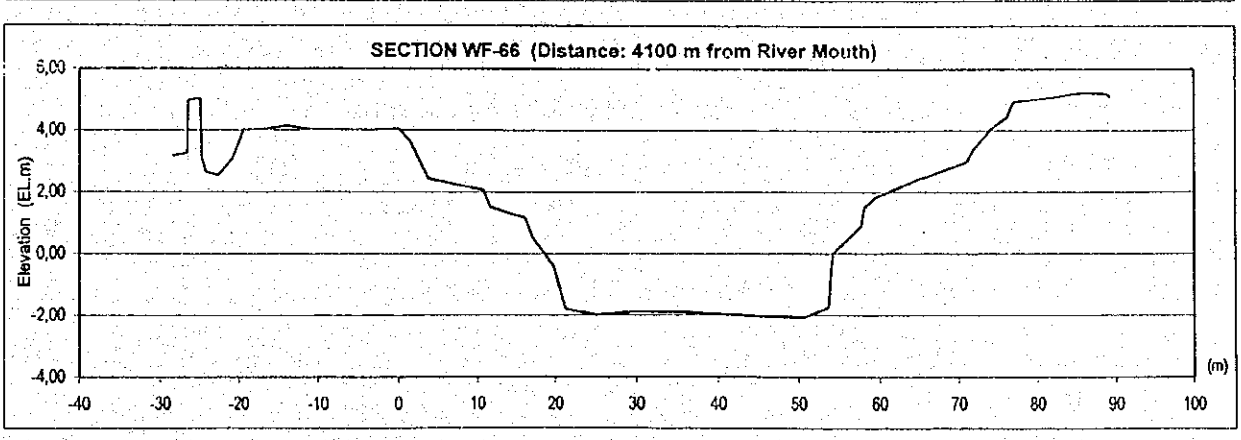

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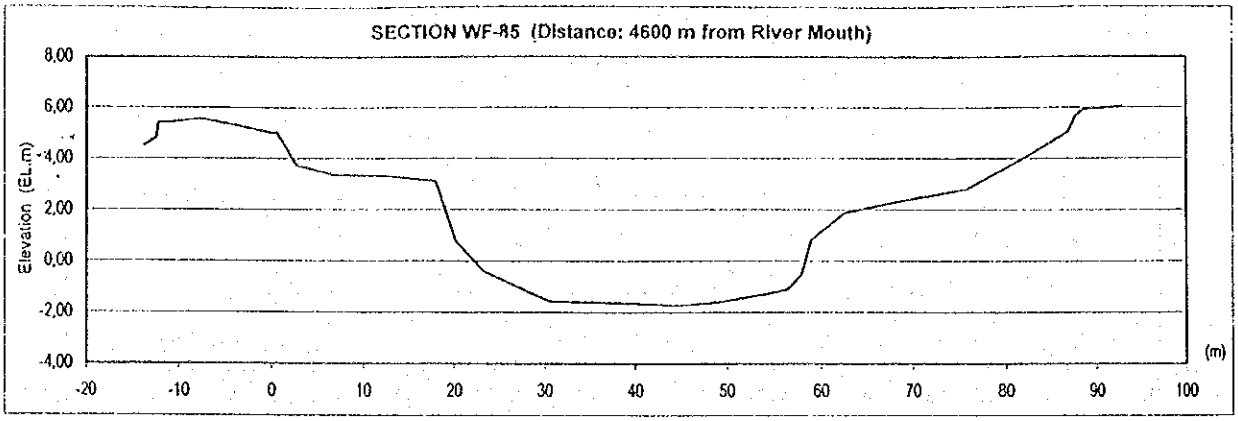

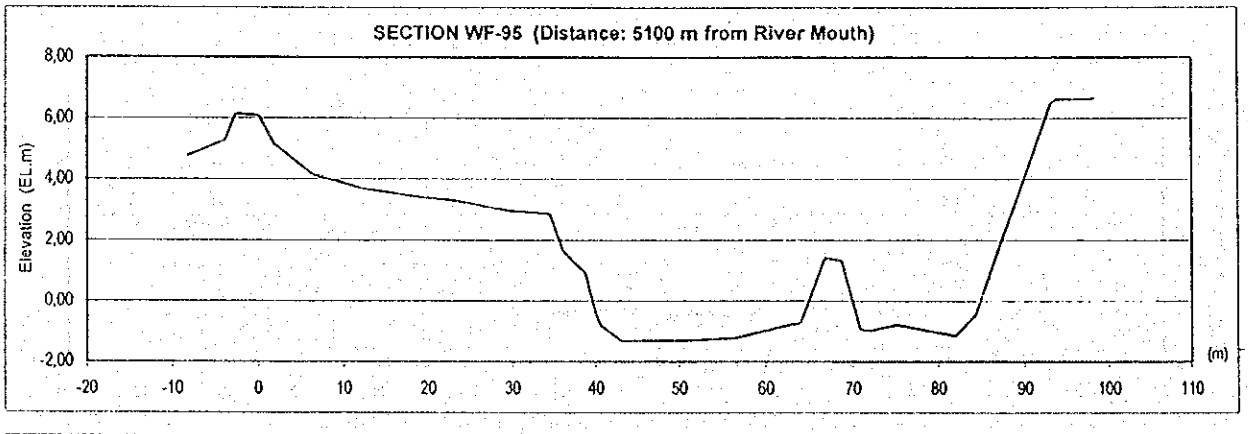

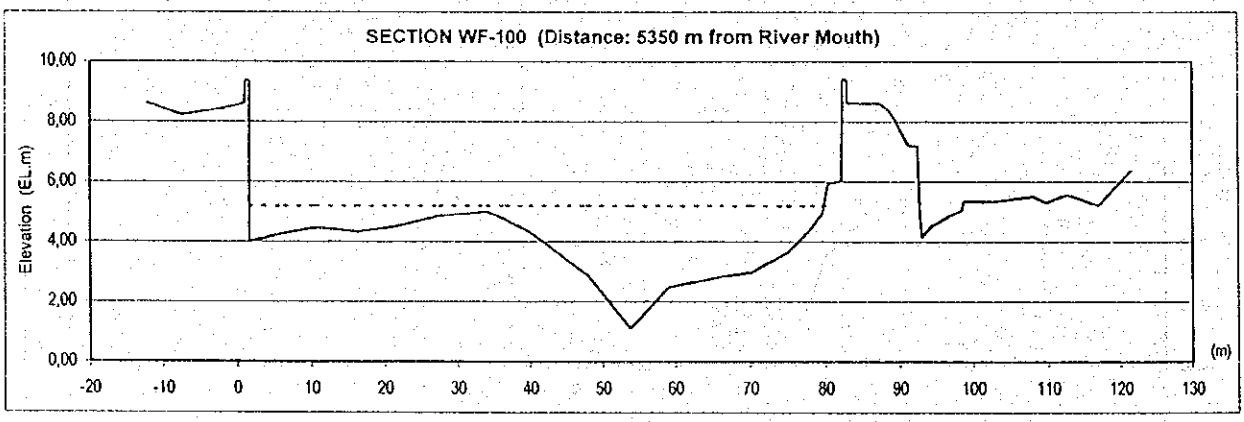

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WEST FLOODWAY FLOOD FLOW CAPACITY CALCULATION (NON-UNIFORM STEADY FLOW)

CASE NO.1

NO	D-NAME	H	A	R	B	V	N	Q	DX	FROUD	IE	TAU-0	U-*	HANT
1	WF.1-250	0.25	411.2	1.232	334.1	0.486	0.035	200	0	1.40E-01	2.20E-04	26.5	5.147	
2	WF.1-100	0.323	304.4	1.133	272.8	0.657	0.035	200	250	1.97E-01	4.48E-04	49.7	7.05	
3	WF-0	0.368	254.1	1.133	244.3	0.787	0.035	200	100	2.36E-01	6.42E-04	71.32	8.445	
4	WF-1	0.397	270.3	1.653	182.1	0.74	0.035	200	50	1.84E-01	3.43E-04	55.57	7.455	
5	WF-2	0.416	288	1.712	178.6	0.695	0.035	200	50	1.70E-01	2.89E-04	48.4	6.957	
6	WF-3	0.426	260.5	1.798	160.5	0.768	0.035	200	50	1.83E-01	3.30E-04	58.17	7.627	
7	WF-5	0.462	352.5	2.522	140.7	0.567	0.035	200	100	1.14E-01	1.15E-04	28.4	5.329	
8	WF-6	0.461	294.3	2.861	110.3	0.68	0.035	200	50	1.28E-01	1.39E-04	39.07	6.25	
9	WF-7	0.459	239.6	2.387	107	0.835	0.035	200	50	1.73E-01	2.68E-04	62.58	7.911	
10	WF-8	0.471	233.4	2.402	102.5	0.857	0.035	200	50	1.77E-01	2.80E-04	65.81	8.112	
11	WF-10	0.5	237.5	2.387	114.3	0.842	0.035	200	100	1.74E-01	2.72E-04	63.68	7.98	
12	WF-11	0.515	247.8	2.487	126.7	0.807	0.035	200	50	1.64E-01	2.37E-04	57.71	7.596	
13	WF-12	0.533	273	2.156	156.8	0.733	0.035	200	50	1.59E-01	2.36E-04	49.89	7.063	
14	WF-13	0.531	215.1	2.389	131	0.93	0.035	200	50	1.92E-01	3.32E-04	77.66	8.812	
15	WF-14	0.525	171.9	2.695	72.3	1.163	0.035	200	50	2.26E-01	4.42E-04	116.72	10.804	
16	WF-15 Br.	0.563	199.9	2.521	144.2	1	0.035	200	50	2.01E-01	3.57E-04	88.28	9.396	
17	WF-16	0.578	188.9	2.209	140	1.059	0.035	200	50	2.28E-01	4.78E-04	103.39	10.168	
18	WF-17	0.612	199.8	1.626	135.5	1.001	0.035	200	50	2.51E-01	6.42E-04	102.3	10.114	
19	WF-18	0.64	193.5	1.778	137.6	1.034	0.035	200	50	2.48E-01	6.08E-04	105.86	10.289	
20	WF-20	0.701	201.5	1.827	140.9	0.993	0.035	200	100	2.35E-01	5.40E-04	96.75	9.836	
21	WF-21	0.727	199.8	1.942	146.7	1.001	0.035	200	50	2.30E-01	5.07E-04	96.46	9.821	
22	WF-22	0.755	202.3	1.697	153.3	0.988	0.035	200	50	2.42E-01	5.91E-04	98.34	9.917	
23	WF-23	0.783	197.3	1.736	157.8	1.014	0.035	200	50	2.46E-01	6.04E-04	102.66	10.132	
24	WF-24	0.81	189.6	1.718	159.6	1.055	0.035	200	50	2.57E-01	6.63E-04	111.56	10.562	
25	WF-25	0.848	203.3	1.748	159.5	0.984	0.035	200	50	2.38E-01	5.63E-04	96.48	9.823	
26	WF-26	0.877	213	2.014	157.7	0.939	0.035	200	50	2.11E-01	4.25E-04	83.8	9.154	
27	WF-27	0.899	211.7	1.873	168	0.945	0.035	200	50	2.21E-01	4.73E-04	86.89	9.321	
28	WF-28	0.924	217.5	1.922	172.1	0.92	0.035	200	50	2.12E-01	4.33E-04	81.63	9.035	
29	WF-30	0.97	235	1.967	171.7	0.851	0.035	200	100	1.94E-01	3.60E-04	69.4	8.33	
30	WF-31	0.988	235	1.873	176.1	0.851	0.035	200	50	1.99E-01	3.84E-04	70.54	8.399	
31	WF-32	1.002	212.9	1.889	181.3	0.939	0.035	200	50	2.18E-01	4.63E-04	85.68	9.256	
32	WF-34	1.052	237.2	1.91	183.7	0.843	0.035	200	100	1.95E-01	3.67E-04	68.77	8.293	
33	WF-35	1.073	251.2	1.916	183.8	0.796	0.035	200	50	1.84E-01	3.26E-04	61.26	7.827	
34	WF-36	1.088	242.4	1.813	185.6	0.825	0.035	200	50	1.96E-01	3.77E-04	67.02	8.187	
35	WF-37	1.108	247.2	1.845	195.4	0.809	0.035	200	50	1.90E-01	3.54E-04	64.07	8.004	
36	WF-38	1.128	259	1.856	189.3	0.772	0.035	200	50	1.81E-01	3.20E-04	58.26	7.633	
37	WF-40	1.157	234.9	1.862	194.8	0.852	0.035	200	100	1.99E-01	3.88E-04	70.77	8.412	
38	WF-41	1.176	235.9	1.887	187.6	0.848	0.035	200	50	1.97E-01	3.78E-04	69.86	8.358	
39	WF-42	1.193	229.6	1.906	180.6	0.871	0.035	200	50	2.02E-01	3.94E-04	73.49	8.573	
40	WF-43	1.209	216.7	1.941	172.9	0.923	0.035	200	50	2.12E-01	4.31E-04	82.01	9.056	
41	WF-44	1.233	227	2.098	159.8	0.881	0.035	200	50	1.94E-01	3.54E-04	72.82	8.533	
42	WF-45	1.245	208.1	2.002	152.1	0.961	0.035	200	50	2.17E-01	4.48E-04	87.96	9.379	
43	WF-46	1.268	210.3	2.109	144.4	0.951	0.035	200	50	2.09E-01	4.10E-04	84.64	9.2	
44	WF-47	1.284	202.2	2.239	140.6	0.989	0.035	200	50	2.11E-01	4.09E-04	89.8	9.476	
45	WF-48	1.306	204.4	2.189	136.6	0.978	0.035	200	50	2.11E-01	4.12E-04	88.48	9.406	
46	WF-50	1.335	179.1	2.409	120.1	1.117	0.035	200	100	2.30E-01	4.73E-04	111.69	10.569	
47	WF-51	1.352	168.8	2.439	108.2	1.185	0.035	200	50	2.42E-01	5.24E-04	125.16	11.188	
48	WF-52	1.377	167.1	2.431	108.1	1.197	0.035	200	50	2.45E-01	5.37E-04	127.86	11.307	
49	WF-54	1.432	174.3	2.674	103.2	1.148	0.035	200	100	2.24E-01	4.35E-04	113.94	10.674	
50	WF-55	1.44	156	2.576	90.8	1.282	0.035	200	50	2.55E-01	5.70E-04	143.99	12	
51	WF-56	1.475	164.5	2.774	69.1	1.216	0.035	200	50	2.33E-01	4.65E-04	126.38	11.242	
52	WF-57	1.496	162.2	2.75	96.4	1.233	0.035	200	50	2.38E-01	4.84E-04	130.33	11.416	
53	WF-58	1.532	167.9	1.899	86.6	1.191	0.035	200	50	2.76E-01	7.39E-04	137.51	11.727	
54	WF-60	1.585	163	3.03	69.8	1.227	0.035	200	100	2.25E-01	4.21E-04	124.9	11.176	
55	WF-61	1.604	160.5	3.178	69.3	1.246	0.035	200	50	2.23E-01	4.07E-04	126.79	11.26	
56	WF-62	1.628	165.1	3.071	66.9	1.211	0.035	200	50	2.21E-01	4.03E-04	121.2	11.009	
57	WF-64	1.675	177.6	3.167	60.5	1.126	0.035	200	100	2.02E-01	3.34E-04	103.72	10.184	
58	WF-65 Br.	1.673	149.8	2.588	53	1.335	0.035	200	50	2.65E-01	6.14E-04	155.81	12.483	
59	WF-66	1.702	151	3.062	58	1.324	0.035	200	50	2.42E-01	4.83E-04	144.99	12.041	
60	WF-67	1.725	150.5	3.089	56.1	1.329	0.035	200	50	2.42E-01	4.81E-04	145.53	12.064	
61	WF-68	1.725	132.7	3.491	52.1	1.507	0.035	200	50	2.58E-01	5.25E-04	179.69	13.405	
62	WF-70	1.76	122.8	3.714	41.8	1.629	0.035	200	100	2.70E-01	5.65E-04	205.62	14.339	
63	WF-71	1.78	119.5	3.856	48	1.674	0.035	200	50	2.72E-01	5.67E-04	214.43	14.643	
64	WF-72	1.785	109.5	3.672	62	1.827	0.035	200	50	3.05E-01	7.22E-04	259.81	16.119	
65	WF-73 Br.	1.899	150.5	2.599	55	1.329	0.035	200	50	2.63E-01	6.05E-04	154.15	12.416	
66	WF-74	1.959	197.5	3.021	63.8	1.013	0.035	200	50	1.86E-01	2.88E-04	85.2	9.23	
67	WF-75	1.937	147.1	2.964	49.7	1.36	0.035	200	50	2.52E-01	5.32E-04	154.52	12.431	
68	WF-76	1.955	140.6	3.167	44.3	1.423	0.035	200	50	2.55E-01	5.33E-04	165.53	12.866	
69	WF-77	1.99	148	3.222	46.6	1.351	0.035	200	50	2.41E-01	4.70E-04	148.38	12.181	
70	WF-78	2.007	141.6	3.142	44.7	1.412	0.035	200	50	2.55E-01	5.31E-04	163.42	12.784	
71	WF-80	2.065	144.3	2.948	47.2	1.386	0.035	200	100	2.58E-01	5.57E-04	160.87	12.683	
72	WF-81	2.096	148.2	3.069	52.4	1.35	0.035	200	50	2.46E-01	5.00E-04	150.46	12.266	
73	WF-82	2.12	147.1	3.147	49	1.359	0.035	200	50	2.45E-01	4.91E-04	151.35	12.302	
74	WF-84	2.16	136.9	2.96	50.1	1.461	0.035	200	100	2.71E-01	6.15E-04	178.42	13.357	
75	WF-85	2.193	138.4	2.99	48	1.446	0.035	200	50	2.67E-01	5.94E-04	174.13	13.196	
76	WF-86	2.231	146	3.176	47.4	1.37	0.035	200	50	2.46E-01	4.93E-04	153.3	12.381	
77	WF-87	2.26	151.1	3.306	46.4	1.324	0.035	200	50	2.33E-01	4.36E-04	141.19	11.882	
78	WF-88	2.274	141.9	2.956	50.9	1.409	0.035	200	50	2.62E-01	5.73E-04	166.08	12.887	
79	WF-90	2.326	136.8	2.933	45.5	1.462	0.035	200	100	2.73E-01	6.24E-04	179.38	13.393	
80	WF-91	2.364	143.6	3.163	45.7	1.393	0.035	200	50	2.50E-01	5.12E-04	158.66	12.596	
81	WF-92	2.376	133.5	3.261	42	1.498	0.035	200	50	2.65E-01	5.69E-04	181.7	13.48	
82	WF-93	2.427	150.9	3.062	46.7	1.325	0.035	200	50	2.42E-01	4.84E-04	145.23	12.051	
83	WF-94	2.465	167.7	3.367	51.6	1.192	0.035	200	50	2.08E-01	3.45E-04	113.89	10.672	
84	WF-96	2.496	157.8	2.978	52	1.268	0.035	200	100	2.35E-01	4.59E-04	134.07	11.579	
85	WF-97	2.526	163.2	2.479	68.2	1.225	0.035	200	50	2.49E-01	5.48E-04	133.21	11.541	
86	WF-98	2.602	364.2	4.171	87.5	0.549	0.035	200	50	8.59E-02	5.50E-05	22.5	4.743	
87	WF-99	2.654	82.2	0.944	86.9	2.432	0.03	200	50	8.00E-01	5.75E-03	531.7	23.059	*
88	WF-100	7.016	79	1.021	76.1	2.531	0.035	200	0	8.00E-01	7.63E-03	763.63	27.634	***

CASE NO.2

NO	D-NAME	H	A	R	B	V	N	Q	DX	FROUD	IE	TAU0	U*	HANT
1	WF.1-250	0.25	411.2	1.232	334.1	0.73	0.035	300	0	2.10E-01	4.94E-04	59.62	7.721	
2	WF.1-100	0.397	324.7	1.204	274.7	0.924	0.035	300	250	2.69E-01	8.17E-04	96.35	9.816	
3	WF-0	0.478	281.2	1.205	256.7	1.067	0.035	300	100	3.11E-01	1.09E-03	128.43	11.333	
4	WF-1	0.525	293.5	1.761	183.3	1.022	0.035	300	50	2.46E-01	6.02E-04	103.87	10.192	
5	WF-2	0.559	313.6	1.844	178.8	0.957	0.035	300	50	2.25E-01	4.96E-04	89.62	9.467	
6	WF-3	0.576	284.9	1.925	161.8	1.053	0.035	300	50	2.42E-01	5.67E-04	107	10.344	
7	WF-5	0.639	377.9	2.688	144.2	0.794	0.035	300	100	1.55E-01	2.07E-04	54.4	7.376	
8	WF-6	0.636	313.7	3.007	111.2	0.956	0.035	300	50	1.76E-01	2.58E-04	76.09	8.723	
9	WF-7	0.633	258.7	2.511	111	1.159	0.035	300	50	2.34E-01	4.83E-04	118.75	10.897	
10	WF-8	0.654	252.9	2.541	107.1	1.186	0.035	300	50	2.38E-01	4.97E-04	123.82	11.128	
11	WF-10	0.707	262.5	2.539	117.7	1.143	0.035	300	100	2.29E-01	4.62E-04	114.95	10.722	
12	WF-11	0.735	275.8	2.642	127.5	1.088	0.035	300	50	2.14E-01	3.97E-04	102.72	10.135	
13	WF-12	0.767	310.2	2.327	158.8	0.967	0.035	300	50	2.03E-01	3.72E-04	84.74	9.205	
14	WF-13	0.762	246.9	2.495	136.3	1.215	0.035	300	50	2.46E-01	5.34E-04	130.64	11.43	
15	WF-14	0.745	191.9	2.749	85.5	1.564	0.035	300	50	3.01E-01	7.78E-04	209.5	14.474	
16	WF-15 Br.	0.822	238.6	2.557	148.3	1.258	0.035	300	50	2.51E-01	5.54E-04	138.84	11.783	
17	WF-16	0.846	227.7	2.291	144	1.317	0.035	300	50	2.78E-01	7.04E-04	158.05	12.572	
18	WF-17	0.895	240.2	1.786	145.9	1.249	0.035	300	50	2.99E-01	8.82E-04	154.34	12.423	
19	WF-18	0.933	234.5	1.963	144.6	1.279	0.035	300	50	2.92E-01	8.16E-04	156.87	12.525	
20	WF-20	1.017	246.1	2.035	143.6	1.219	0.035	300	100	2.73E-01	7.06E-04	140.73	11.863	
21	WF-21	1.052	247.9	2.106	149.8	1.21	0.035	300	50	2.66E-01	6.65E-04	137.15	11.711	
22	WF-22	1.09	254.3	1.919	156.7	1.179	0.035	300	50	2.72E-01	7.15E-04	134.39	11.593	
23	WF-23	1.126	252.8	1.916	164.4	1.187	0.035	300	50	2.74E-01	7.25E-04	136.14	11.668	
24	WF-24	1.16	247.4	1.873	167.3	1.213	0.035	300	50	2.83E-01	7.80E-04	143.18	11.966	
25	WF-25	1.204	262.2	1.937	168.6	1.144	0.035	300	50	2.63E-01	6.64E-04	126.1	11.229	
26	WF-26	1.239	272.7	2.139	169.9	1.1	0.035	300	50	2.40E-01	5.38E-04	112.74	10.618	
27	WF-27	1.268	275.3	2.033	176	1.09	0.035	300	50	2.44E-01	5.65E-04	112.49	10.606	
28	WF.28	1.299	283.9	2.076	183.1	1.057	0.035	300	50	2.34E-01	5.16E-04	105.04	10.249	
29	WF-30	1.353	302.2	2.179	175.4	0.993	0.035	300	100	2.15E-01	4.28E-04	91.28	9.554	
30	WF-31	1.375	304.7	2.1	180.3	0.985	0.035	300	50	2.17E-01	4.42E-04	90.87	9.533	
31	WF-32	1.392	284.4	2.057	187.2	1.055	0.035	300	50	2.35E-01	5.21E-04	105.02	10.248	
32	WF-34	1.449	311	2.073	195.7	0.965	0.035	300	100	2.14E-01	4.31E-04	87.61	9.36	
33	WF-35	1.474	326.9	2.11	194.1	0.918	0.035	300	50	2.02E-01	3.81E-04	78.82	8.878	
34	WF-36	1.491	317.5	2.043	189.8	0.945	0.035	300	50	2.11E-01	4.22E-04	84.47	9.191	
35	WF-37	1.514	326.4	2.041	202.5	0.919	0.035	300	50	2.06E-01	4.00E-04	79.95	8.941	
36	WF-38	1.536	336.8	2.106	193	0.891	0.035	300	50	1.96E-01	3.60E-04	74.3	8.62	
37	WF-40	1.569	315.7	2.052	197.1	0.95	0.035	300	100	2.12E-01	4.24E-04	85.32	9.237	
38	WF-41	1.59	314.3	2.092	189.9	0.955	0.035	300	50	2.11E-01	4.17E-04	85.52	9.248	
39	WF-42	1.609	305.1	2.109	183.2	0.983	0.035	300	50	2.16E-01	4.38E-04	90.53	9.515	
40	WF-43	1.626	289.5	2.117	177.1	1.036	0.035	300	50	2.28E-01	4.84E-04	100.38	10.019	
41	WF-44	1.651	295	2.278	168.5	1.017	0.035	300	50	2.15E-01	4.23E-04	94.38	9.715	
42	WF-45	1.666	274	2.182	161.5	1.095	0.035	300	50	2.37E-01	5.19E-04	110.94	10.533	
43	WF-46	1.691	273.3	2.294	154	1.098	0.035	300	50	2.32E-01	4.88E-04	109.7	10.474	
44	WF-47	1.711	264.4	2.382	148.5	1.135	0.035	300	50	2.35E-01	4.96E-04	115.77	10.76	
45	WF-48	1.736	263.9	2.391	140.2	1.137	0.035	300	50	2.35E-01	4.95E-04	115.99	10.77	
46	WF-50	1.773	235.8	2.495	135	1.272	0.035	300	100	2.57E-01	5.86E-04	143.27	11.97	
47	WF-51	1.794	223.3	2.521	129.3	1.343	0.035	300	50	2.70E-01	6.44E-04	159.15	12.616	
48	WF-52	1.823	218.4	2.564	119.8	1.374	0.035	300	50	2.74E-01	6.59E-04	165.5	12.865	
49	WF-54	1.889	225.1	2.793	117.4	1.333	0.035	300	100	2.55E-01	5.53E-04	151.39	12.304	
50	WF-55	1.899	202.5	2.719	107.3	1.481	0.035	300	50	2.87E-01	7.08E-04	188.76	13.739	
51	WF-56	1.935	205.1	2.951	98	1.463	0.035	300	50	2.72E-01	6.19E-04	179.11	13.383	
52	WF-57	1.97	209.4	2.894	102	1.433	0.035	300	50	2.69E-01	6.10E-04	172.92	13.15	
53	WF-58	2.008	210.9	2.234	92.5	1.422	0.035	300	50	3.04E-01	8.49E-04	185.76	13.63	
54	WF-60	2.069	201	3.236	84.2	1.492	0.035	300	100	2.65E-01	5.70E-04	180.77	13.445	
55	WF-61	2.097	200.7	3.322	85.8	1.494	0.035	300	50	2.62E-01	5.52E-04	179.69	13.405	
56	WF-62	2.126	202.8	3.301	79.5	1.479	0.035	300	50	2.60E-01	5.45E-04	176.45	13.283	
57	WF-64	2.189	215.3	3.444	78.5	1.393	0.035	300	100	2.40E-01	4.57E-04	154.33	12.423	
58	WF-65 Br.	2.178	179.7	2.876	66.7	1.669	0.035	300	50	3.14E-01	8.34E-04	235.18	15.336	
59	WF-66	2.223	184.6	3.365	72.4	1.625	0.035	300	50	2.83E-01	6.42E-04	211.62	14.547	
60	WF-67	2.255	184.6	3.361	69.8	1.626	0.035	300	50	2.83E-01	6.43E-04	211.77	14.552	
61	WF-68	2.221	149.8	3.931	54.8	2.003	0.035	300	50	3.23E-01	7.92E-04	305.16	17.469	
62	WF-70	2.265	137.3	4.134	43.8	2.185	0.035	300	100	3.43E-01	8.81E-04	357.07	18.896	
63	WF-71	2.293	132.8	4.27	51	2.258	0.035	300	50	3.49E-01	9.02E-04	377.44	19.428	
64	WF-72	2.289	120.5	4.021	66.7	2.49	0.035	300	50	3.97E-01	1.19E-03	468.25	21.639	
65	WF-73 Br.	2.53	191.5	2.751	73.7	1.567	0.035	300	50	3.02E-01	7.80E-04	210.36	14.504	
66	WF-74	2.604	241.5	3.567	73.6	1.242	0.035	300	50	2.10E-01	3.47E-04	121.2	11.009	
67	WF-75	2.571	182.9	3.424	63.6	1.64	0.035	300	50	2.83E-01	6.38E-04	214.24	14.637	
68	WF-76	2.59	174.8	3.583	62.6	1.717	0.035	300	50	2.90E-01	6.59E-04	231.21	15.206	
69	WF-77	2.639	186.2	3.609	68.4	1.611	0.035	300	50	2.71E-01	5.74E-04	203.16	14.253	
70	WF-78	2.654	176.3	3.59	67.6	1.701	0.035	300	50	2.87E-01	6.45E-04	226.96	15.065	
71	WF-80	2.722	177.6	3.465	62.9	1.69	0.035	300	100	2.90E-01	6.67E-04	226.47	15.049	
72	WF-81	2.765	185.5	3.561	59.9	1.617	0.035	300	50	2.74E-01	5.89E-04	205.57	14.338	
73	WF-82	2.791	183.2	3.645	62	1.638	0.035	300	50	2.74E-01	5.86E-04	209.27	14.466	
74	WF-84	2.841	174.5	3.444	57.9	1.719	0.035	300	100	2.96E-01	6.96E-04	234.87	15.326	
75	WF-85	2.876	174.7	3.443	58.9	1.717	0.035	300	50	2.96E-01	6.95E-04	234.4	15.31	
76	WF-86	2.922	182.7	3.611	58.5	1.642	0.035	300	50	2.76E-01	5.96E-04	210.87	14.521	
77	WF-87	2.956	187.3	3.825	56.4	1.602	0.035	300	50	2.62E-01	5.26E-04	197.01	14.036	
78	WF-88	2.974	179.8	3.496	56.4	1.669	0.035	300	50	2.85E-01	6.43E-04	220.27	14.841	
79	WF-90	3.028	171.9	3.496	54.7	1.745	0.035	300	100	2.98E-01	7.03E-04	240.87	15.52	
80	WF-91	3.074	179.7	3.671	58.2	1.669	0.035	300	50	2.78E-01	6.03E-04	216.86	14.726	
81	WF-92	3.08	165	3.793	50.4	1.818	0.035	300	50	2.98E-01	6.84E-04	254.33	15.948	
82	WF-93	3.148	186.8	3.58	53.5	1.606	0.035	300	50	2.71E-01	5.77E-04	202.33	14.224	
83	WF-94	3.199	208.3	3.943	59.7	1.44	0.035	300	50	2.32E-01	4.08E-04	157.6	12.554	
84	WF-96	3.233	197.6	3.591	60.1	1.518	0.035	300	100	2.56E-01	5.14E-04	180.73	13.444	
85	WF-97	3.28	217.9	3.043	78.2	1.376	0.035	300	50	2.52E-01	5.26E-04	156.96	12.528	
86	WF-98	3.367	431.6	4.863	90.5	0.695	0.035	300	50	1.01E-01	7.19E-05	34.24	5.852	
87	WF-99	3.191	129.4	1.469	88.4	2.319	0.03	300	50	6.11E-01	2.90E-03	417.27	20.427	
88	WF-100	7.339	104.3	1.319	79.1	2.875	0.035	300	0	8.00E-01	7.00E-03	904.97	30.083	***

CASE NO.3

NO	D-NAME	H	A	R	B	V	N	Q	DX	FROUD	IE	TAU-0	U-*	HANT
1	WF.1-250	0.25	411.2	1.232	334.1	0.973	0.035	400	0	2.80E-01	8.78E-04	105.99	10.295	
2	WF.1-100	0.485	348.4	1.288	276.9	1.148	0.035	400	250	3.23E-01	1.15E-03	145.39	12.058	
3	WF-0	0.596	311.4	1.308	259.1	1.284	0.035	400	100	3.59E-01	1.41E-03	181.1	13.457	
4	WF-1	0.655	317.5	1.879	183.4	1.26	0.035	400	50	2.94E-01	8.39E-04	154.47	12.428	
5	WF-2	0.704	339.4	1.981	178.8	1.179	0.035	400	50	2.68E-01	6.84E-04	132.77	11.522	
6	WF-3	0.726	309.6	2.054	163.3	1.292	0.035	400	50	2.88E-01	7.83E-04	157.68	12.557	
7	WF-5	0.815	403.4	2.853	148.3	0.991	0.035	400	100	1.88E-01	2.98E-04	83.21	9.122	
8	WF-6	0.809	332.8	3.151	112.2	1.202	0.035	400	50	2.16E-01	3.83E-04	118.29	10.876	
9	WF-7	0.803	277.9	2.643	114.7	1.439	0.035	400	50	2.83E-01	6.95E-04	179.89	13.412	
10	WF-8	0.834	272.4	2.692	111.3	1.468	0.035	400	50	2.86E-01	7.05E-04	186.06	13.641	
11	WF-10	0.912	287.2	2.69	121.1	1.393	0.035	400	100	2.71E-01	6.35E-04	167.48	12.941	
12	WF-11	0.952	303.6	2.796	128.4	1.318	0.035	400	50	2.52E-01	5.40E-04	147.95	12.163	
13	WF-12	0.998	347.2	2.497	160.7	1.152	0.035	400	50	2.33E-01	4.80E-04	117.47	10.838	
14	WF-13	0.99	278.5	2.6	141.7	1.436	0.035	400	50	2.85E-01	7.07E-04	180.12	13.421	
15	WF-14	0.958	211.1	2.8	98.2	1.895	0.035	400	50	3.62E-01	1.12E-03	305.9	17.49	
16	WF-15 Br.	1.081	277.2	2.625	151.2	1.443	0.035	400	50	2.85E-01	7.05E-04	181.27	13.464	
17	WF-16	1.111	266.2	2.41	146.2	1.503	0.035	400	50	3.09E-01	8.56E-04	202.2	14.22	
18	WF-17	1.169	280.7	1.985	150.6	1.425	0.035	400	50	3.23E-01	9.97E-04	193.94	13.926	
19	WF-18	1.213	275.5	2.166	147.9	1.452	0.035	400	50	3.15E-01	9.21E-04	195.56	13.984	
20	WF-20	1.308	288.5	2.255	146.2	1.386	0.035	400	100	2.95E-01	7.96E-04	175.95	13.265	
21	WF-21	1.35	293.2	2.304	153	1.364	0.035	400	50	2.87E-01	7.49E-04	169.19	13.007	
22	WF-22	1.394	302.7	2.143	160.7	1.321	0.035	400	50	2.88E-01	7.74E-04	162.57	12.75	
23	WF-23	1.433	303.6	2.131	166.7	1.317	0.035	400	50	2.88E-01	7.75E-04	161.9	12.724	
24	WF-24	1.471	299.7	2.078	169.7	1.335	0.035	400	50	2.96E-01	8.23E-04	167.59	12.946	
25	WF-25	1.518	315.3	2.147	171.7	1.269	0.035	400	50	2.77E-01	7.12E-04	149.8	12.239	
26	WF-26	1.556	326.8	2.3	176.9	1.224	0.035	400	50	2.58E-01	6.05E-04	136.28	11.674	
27	WF-27	1.589	332.3	2.22	181	1.204	0.035	400	50	2.58E-01	6.13E-04	133.35	11.548	
28	WF-28	1.623	343.8	2.262	188.2	1.164	0.035	400	50	2.47E-01	5.59E-04	123.83	11.128	
29	WF-30	1.681	360.3	2.395	177.2	1.11	0.035	400	100	2.29E-01	4.71E-04	110.6	10.517	
30	WF-31	1.706	365	2.324	182.9	1.096	0.035	400	50	2.30E-01	4.78E-04	108.87	10.434	
31	WF-32	1.727	349.2	2.215	197.6	1.146	0.035	400	50	2.46E-01	5.57E-04	120.85	10.993	
32	WF-34	1.787	377.3	2.293	198.1	1.06	0.035	400	100	2.24E-01	4.56E-04	102.35	10.117	
33	WF-35	1.813	393.5	2.336	197.7	1.017	0.035	400	50	2.12E-01	4.08E-04	93.49	9.669	
34	WF-36	1.832	383.7	2.264	195.9	1.042	0.035	400	50	2.21E-01	4.48E-04	99.34	9.967	
35	WF-37	1.857	395.8	2.289	202.6	1.011	0.035	400	50	2.13E-01	4.15E-04	93.05	9.646	
36	WF-38	1.878	403.2	2.364	194.4	0.992	0.035	400	50	2.06E-01	3.83E-04	88.68	9.417	
37	WF-40	1.914	383.6	2.291	197.3	1.043	0.035	400	100	2.20E-01	4.41E-04	99	9.95	
38	WF-41	1.935	379.8	2.33	190.4	1.053	0.035	400	50	2.20E-01	4.40E-04	100.43	10.021	
39	WF-42	1.954	368.3	2.344	183.7	1.086	0.035	400	50	2.27E-01	4.64E-04	106.61	10.325	
40	WF-43	1.972	350.8	2.345	177.4	1.14	0.035	400	50	2.38E-01	5.11E-04	117.5	10.84	
41	WF-44	1.998	353.3	2.5	168.7	1.132	0.035	400	50	2.29E-01	4.63E-04	113.37	10.647	
42	WF-45	2.014	330.2	2.41	161.5	1.211	0.035	400	50	2.49E-01	5.57E-04	131.42	11.464	
43	WF-46	2.04	327.4	2.502	156.7	1.222	0.035	400	50	2.47E-01	5.38E-04	131.97	11.488	
44	WF-47	2.062	316.9	2.568	152.1	1.262	0.035	400	50	2.52E-01	5.55E-04	139.65	11.817	
45	WF-48	2.088	313.5	2.6	143.1	1.276	0.035	400	50	2.53E-01	5.58E-04	142.11	11.921	
46	WF-50	2.131	284.1	2.656	138.3	1.408	0.035	400	100	2.76E-01	6.60E-04	171.84	13.109	
47	WF-51	2.155	270.3	2.674	132.9	1.48	0.035	400	50	2.89E-01	7.23E-04	189.4	13.762	
48	WF-52	2.185	263	2.72	125.7	1.521	0.035	400	50	2.95E-01	7.46E-04	198.89	14.103	
49	WF-54	2.26	269.1	2.964	120.3	1.486	0.035	400	100	2.76E-01	6.36E-04	184.61	13.587	
50	WF-55	2.271	243.3	2.883	112.7	1.644	0.035	400	50	3.09E-01	8.07E-04	227.96	15.098	
51	WF-56	2.31	244.3	3.101	108.4	1.638	0.035	400	50	2.97E-01	7.26E-04	220.77	14.858	
52	WF-57	2.351	248.8	3.089	104.8	1.608	0.035	400	50	2.92E-01	7.04E-04	213.11	14.598	
53	WF-58	2.391	247.4	2.459	98.6	1.617	0.035	400	50	3.29E-01	9.65E-04	232.53	15.249	
54	WF-60	2.458	234.3	3.422	90.5	1.707	0.035	400	100	2.95E-01	6.92E-04	232.18	15.237	
55	WF-61	2.493	235.1	3.508	87.8	1.701	0.035	400	50	2.90E-01	6.65E-04	228.69	15.123	
56	WF-62	2.528	236.3	3.492	86.5	1.693	0.035	400	50	2.89E-01	6.62E-04	226.72	15.057	
57	WF-64	2.603	248.7	3.674	83	1.609	0.035	400	100	2.68E-01	5.59E-04	201.31	14.188	
58	WF-65 Br.	2.591	210.8	3.016	82.3	1.898	0.035	400	50	3.49E-01	1.01E-03	299.18	17.297	
59	WF-66	2.645	216.4	3.581	77.6	1.849	0.035	400	50	3.12E-01	7.64E-04	268.18	16.376	
60	WF-67	2.682	216	3.572	76.5	1.852	0.035	400	50	3.13E-01	7.69E-04	269.33	16.411	
61	WF-68	2.595	162.6	4.263	56.8	2.459	0.035	400	50	3.81E-01	1.07E-03	447.85	21.162	
62	WF-70	2.646	148.2	4.451	45.4	2.698	0.035	400	100	4.09E-01	1.22E-03	531.4	23.052	
63	WF-71	2.68	142.9	4.582	53.3	2.8	0.035	400	50	4.18E-01	1.26E-03	566.57	23.803	
64	WF-72	2.66	128.6	4.277	70.1	3.111	0.035	400	50	4.81E-01	1.71E-03	715.93	26.757	
65	WF-73 Br.	3.064	228.7	2.894	82	1.749	0.035	400	50	3.28E-01	9.09E-04	257.73	16.054	
66	WF-74	3.15	283	3.984	78	1.414	0.035	400	50	2.26E-01	3.88E-04	151.34	12.302	
67	WF-75	3.11	219.3	3.73	74	1.824	0.035	400	50	3.02E-01	7.05E-04	257.53	16.048	
68	WF-76	3.129	209.5	3.864	68.5	1.909	0.035	400	50	3.10E-01	7.37E-04	278.91	16.701	
69	WF-77	3.187	223.8	3.89	71.3	1.787	0.035	400	50	2.90E-01	6.40E-04	243.89	15.617	
70	WF-78	3.206	214.6	3.822	71.9	1.864	0.035	400	50	3.05E-01	7.12E-04	266.64	16.329	
71	WF-80	3.285	219.3	3.698	79.2	1.824	0.035	400	100	3.03E-01	7.13E-04	258.39	16.075	
72	WF-81	3.323	221.5	3.859	79.3	1.806	0.035	400	50	2.94E-01	6.60E-04	249.61	15.799	
73	WF-82	3.352	219.3	3.926	88.1	1.824	0.035	400	50	2.94E-01	6.58E-04	253.17	15.911	
74	WF-84	3.403	207	3.834	63.1	1.932	0.035	400	100	3.15E-01	7.62E-04	286.3	16.92	
75	WF-85	3.444	208.8	3.781	67.8	1.916	0.035	400	50	3.15E-01	7.63E-04	282.78	16.816	
76	WF-86	3.492	215.8	3.939	75.1	1.854	0.035	400	50	2.98E-01	6.77E-04	261.23	16.163	
77	WF-87	3.531	220.5	4.207	62.7	1.814	0.035	400	50	2.83E-01	5.93E-04	244.64	15.641	
78	WF-88	3.55	212.5	3.925	61.3	1.883	0.035	400	50	3.04E-01	7.02E-04	269.8	16.425	
79	WF-90	3.609	204.1	3.901	63.1	1.96	0.035	400	100	3.17E-01	7.66E-04	292.99	17.117	
80	WF-91	3.659	211.7	4.043	71.1	1.889	0.035	400	50	3.00E-01	6.79E-04	268.91	16.399	
81	WF-92	3.654	191.3	4.225	57.7	2.091	0.035	400	50	3.25E-01	7.84E-04	324.79	18.022	
82	WF-93	3.741	217.8	4.09	60.9	1.837	0.035	400	50	2.90E-01	6.32E-04	253.2	15.912	
83	WF-94	3.802	243.3	4.387	68	1.644	0.035	400	50	2.51E-01	4.61E-04	198.18	14.078	
84	WF-96	3.853	243.9	3.888	87.3	1.64	0.035	400	100	2.66E-01	5.39E-04	205.42	14.333	
85	WF-97	3.905	270.1	3.466	86.5	1.481	0.035	400	50	2.54E-01	5.12E-04	173.99	13.191	
86	WF-98	3.997	487.1	5.433	93	0.821	0.035	400	50	1.13E-01	8.65E-05	46.05	6.786	
87	WF-99	3.838	187	2.1	89.9	2.139	0.03	400	50	4.71E-01	1.53E-03	314.98	17.748	
88	WF-100	7.624	126.9	1.584	80.7	3.151	0.035	400	0	8.00E-01	6.59E-03	1022.77	31.981	***

CASE NO.4

NO	D-NAME	H	A	R	B	V	N	Q	DX	FROUD	IE	TAU-0	U-*	HANT
1	WF.1-250	0.25	411.2	1.232	334.1	1.216	0.035	500	0	3.50E-01	1.37E-03	165.6	12.869	
2	WF.1-100	0.583	375.6	1.383	277.8	1.331	0.035	500	250	3.62E-01	1.41E-03	190.96	13.819	
3	WF-0	0.717	342.7	1.42	259.1	1.459	0.035	500	100	3.91E-01	1.64E-03	227.44	15.081	
4	WF-1	0.783	340.8	1.994	183.6	1.467	0.035	500	50	3.32E-01	1.05E-03	205.3	14.328	
5	WF-2	0.844	364.5	2.114	178.8	1.372	0.035	500	50	3.01E-01	8.50E-04	176.02	13.267	
6	WF-3	0.871	333.4	2.179	164.6	1.5	0.035	500	50	3.25E-01	9.76E-04	208.31	14.433	
7	WF-5	0.984	427.9	3.012	152.2	1.169	0.035	500	100	2.15E-01	3.85E-04	113.53	10.655	
8	WF-6	0.972	351	3.287	113.2	1.424	0.035	500	50	2.51E-01	5.09E-04	163.83	12.8	
9	WF-7	0.965	296.1	2.768	118.2	1.689	0.035	500	50	3.24E-01	8.99E-04	243.84	15.615	
10	WF-8	1.005	291	2.835	115.2	1.718	0.035	500	50	3.26E-01	9.01E-04	250.37	15.823	
11	WF-10	1.108	311.1	2.846	122.7	1.607	0.035	500	100	3.04E-01	7.85E-04	218.84	14.793	
12	WF-11	1.16	330.3	2.956	129	1.514	0.035	500	50	2.81E-01	6.62E-04	191.72	13.846	
13	WF-12	1.22	382.9	2.683	161	1.306	0.035	500	50	2.55E-01	5.61E-04	147.36	12.139	
14	WF-13	1.209	310.2	2.731	144.9	1.612	0.035	500	50	3.12E-01	8.33E-04	223.07	14.935	
15	WF-14	1.17	236.8	2.807	118.3	2.111	0.035	500	50	4.03E-01	1.38E-03	379.37	19.477	
16	WF-15 Br.	1.322	313.8	2.755	151.5	1.593	0.035	500	50	3.07E-01	8.05E-04	217.35	14.743	
17	WF-16	1.356	302.1	2.568	146.2	1.655	0.035	500	50	3.30E-01	9.54E-04	240.18	15.498	
18	WF-17	1.421	318.8	2.192	152	1.568	0.035	500	50	3.38E-01	1.06E-03	227.26	15.075	
19	WF-18	1.468	313.5	2.359	149.9	1.595	0.035	500	50	3.32E-01	9.93E-04	229.42	15.147	
20	WF-20	1.571	327	2.46	148	1.529	0.035	500	100	3.11E-01	8.62E-04	207.87	14.418	
21	WF-21	1.618	334.4	2.5	154.9	1.495	0.035	500	50	3.02E-01	8.07E-04	197.79	14.064	
22	WF-22	1.666	346.8	2.364	162.6	1.442	0.035	500	50	3.00E-01	8.09E-04	187.37	13.688	
23	WF-23	1.708	349.8	2.346	167.9	1.429	0.035	500	50	2.98E-01	8.03E-04	184.55	13.585	
24	WF-24	1.748	346.9	2.296	170.4	1.441	0.035	500	50	3.04E-01	8.40E-04	189.04	13.749	
25	WF-25	1.796	363.6	2.365	173.2	1.375	0.035	500	50	2.86E-01	7.35E-04	170.37	13.053	
26	WF-26	1.837	376.6	2.502	177.5	1.328	0.035	500	50	2.68E-01	6.36E-04	155.91	12.487	
27	WF-27	1.873	384.4	2.417	184.2	1.301	0.035	500	50	2.67E-01	6.39E-04	151.38	12.303	
28	WF.28	1.909	397.8	2.465	189.6	1.257	0.035	500	50	2.56E-01	5.81E-04	140.39	11.849	
29	WF-30	1.969	411.3	2.602	178.4	1.216	0.035	500	100	2.41E-01	5.06E-04	128.99	11.357	
30	WF-31	1.996	418	2.533	184.7	1.196	0.035	500	50	2.40E-01	5.08E-04	126.03	11.226	
31	WF-32	2.02	407.6	2.366	208.1	1.227	0.035	500	50	2.55E-01	5.85E-04	135.59	11.644	
32	WF-34	2.082	435.9	2.506	198.9	1.147	0.035	500	100	2.31E-01	4.73E-04	116.27	10.783	
33	WF-35	2.11	452.2	2.554	199.6	1.106	0.035	500	50	2.21E-01	4.29E-04	107.37	10.362	
34	WF-36	2.129	442.3	2.479	199.2	1.13	0.035	500	50	2.29E-01	4.67E-04	113.36	10.647	
35	WF-37	2.156	456.4	2.519	202.9	1.095	0.035	500	50	2.21E-01	4.29E-04	105.87	10.289	
36	WF-38	2.178	462.3	2.586	197.5	1.082	0.035	500	50	2.15E-01	4.04E-04	102.32	10.115	
37	WF-40	2.216	443.1	2.523	197.8	1.128	0.035	500	100	2.27E-01	4.54E-04	112.28	10.596	
38	WF-41	2.237	437.3	2.565	191	1.143	0.035	500	50	2.28E-01	4.56E-04	114.68	10.709	
39	WF-42	2.256	423.7	2.581	184.1	1.18	0.035	500	50	2.35E-01	4.82E-04	121.91	11.041	
40	WF-43	2.274	404.3	2.58	177.4	1.237	0.035	500	50	2.46E-01	5.30E-04	133.89	11.571	
41	WF-44	2.299	404.3	2.733	168.8	1.237	0.035	500	50	2.39E-01	4.90E-04	131.34	11.46	
42	WF-45	2.316	378.9	2.64	161.5	1.319	0.035	500	50	2.59E-01	5.85E-04	151.23	12.298	
43	WF-46	2.343	374.9	2.728	156.8	1.334	0.035	500	50	2.58E-01	5.72E-04	152.85	12.363	
44	WF-47	2.366	363.1	2.782	152.3	1.377	0.035	500	50	2.64E-01	5.94E-04	161.87	12.723	
45	WF-48	2.393	357.8	2.783	148.4	1.397	0.035	500	50	2.68E-01	6.11E-04	166.65	12.909	
46	WF-50	2.439	326.8	2.835	139.9	1.53	0.035	500	100	2.90E-01	7.15E-04	198.52	14.09	
47	WF-51	2.465	311.5	2.841	135.8	1.605	0.035	500	50	3.04E-01	7.84E-04	218.36	14.777	
48	WF-52	2.497	302.8	2.862	132.6	1.651	0.035	500	50	3.12E-01	8.22E-04	230.5	15.182	
49	WF-54	2.578	307.5	3.146	121	1.626	0.035	500	100	2.93E-01	7.03E-04	216.69	14.721	
50	WF-55	2.589	279.1	3.058	114.8	1.792	0.035	500	50	3.27E-01	8.86E-04	265.49	16.294	
51	WF-56	2.632	279.5	3.258	112.2	1.789	0.035	500	50	3.17E-01	8.12E-04	259.23	16.101	
52	WF-57	2.676	283	3.277	106.3	1.767	0.035	500	50	3.12E-01	7.86E-04	252.34	15.885	
53	WF-58	2.717	279.7	2.722	99.3	1.788	0.035	500	50	3.46E-01	1.03E-03	274.79	16.577	
54	WF-60	2.792	266.2	3.541	101.5	1.878	0.035	500	100	3.19E-01	8.01E-04	277.78	16.667	
55	WF-61	2.829	265.2	3.69	90.3	1.886	0.035	500	50	3.14E-01	7.64E-04	276.19	16.619	
56	WF-62	2.869	266.1	3.69	88.3	1.879	0.035	500	50	3.13E-01	7.59E-04	274.33	16.563	
57	WF-64	2.955	278.4	3.877	86.8	1.796	0.035	500	100	2.91E-01	6.49E-04	246.53	15.701	
58	WF-65 Br.	2.945	241.3	3.126	87.6	2.072	0.035	500	50	3.74E-01	1.15E-03	352.55	18.776	
59	WF-66	3.001	244.2	3.788	79.6	2.048	0.035	500	50	3.36E-01	8.70E-04	322.93	17.97	
60	WF-67	3.044	243.9	3.77	78.9	2.05	0.035	500	50	3.37E-01	8.77E-04	324.1	18.003	
61	WF-68	2.887	172.7	4.522	58.4	2.895	0.035	500	50	4.35E-01	1.37E-03	608.64	24.671	
62	WF-70	2.944	156.8	4.698	46.5	3.19	0.035	500	100	4.70E-01	1.58E-03	729.25	27.005	
63	WF-71	2.982	150.7	4.825	55	3.317	0.035	500	50	4.82E-01	1.65E-03	781.87	27.962	
64	WF-72	2.939	134.6	4.469	72.7	3.713	0.035	500	50	5.61E-01	2.30E-03	1005.02	31.702	
65	WF-73 Br.	3.539	261.9	3.022	89.5	1.909	0.035	500	50	3.51E-01	1.02E-03	302.76	17.4	
66	WF-74	3.638	321.5	4.35	81.6	1.555	0.035	500	50	2.38E-01	4.17E-04	177.93	13.339	
67	WF-75	3.589	251.7	4.002	83.2	1.987	0.035	500	50	3.17E-01	7.61E-04	298.43	17.275	
68	WF-76	3.609	240.4	4.114	73.8	2.08	0.035	500	50	3.28E-01	8.04E-04	324.08	18.002	
69	WF-77	3.674	257.2	4.139	74	1.944	0.035	500	50	3.05E-01	6.96E-04	282.5	16.808	
70	WF-78	3.698	248.7	4.028	75.8	2.01	0.035	500	50	3.20E-01	7.73E-04	304.97	17.463	
71	WF-80	3.786	256.4	3.906	93.6	1.95	0.035	500	100	3.15E-01	7.58E-04	290	17.029	
72	WF-81	3.819	253.5	4.125	96.7	1.973	0.035	500	50	3.10E-01	7.21E-04	291.27	17.067	
73	WF-82	3.852	251.5	4.176	111.4	1.988	0.035	500	50	3.11E-01	7.20E-04	294.74	17.168	
74	WF-84	3.901	235.9	4.181	67.7	2.119	0.035	500	100	3.31E-01	8.17E-04	334.71	18.295	
75	WF-85	3.948	239.1	4.081	75.7	2.091	0.035	500	50	3.31E-01	8.21E-04	328.53	18.125	
76	WF-86	3.998	245.1	4.23	89.9	2.04	0.035	500	50	3.17E-01	7.45E-04	308.96	17.577	
77	WF-87	4.041	250.1	4.545	68.3	1.999	0.035	500	50	3.00E-01	6.50E-04	289.73	17.021	
78	WF-88	4.062	241.4	4.305	65.6	2.071	0.035	500	50	3.19E-01	7.50E-04	316.53	17.791	
79	WF-90	4.123	232.6	4.259	70.5	2.15	0.035	500	100	3.33E-01	8.20E-04	342.3	18.501	
80	WF-91	4.177	240.1	4.373	82.6	2.082	0.035	500	50	3.18E-01	7.43E-04	318.31	17.841	
81	WF-92	4.161	214.4	4.607	64.2	2.332	0.035	500	50	3.47E-01	8.69E-04	392.48	19.811	
82	WF-93	4.265	245.2	4.541	67.5	2.039	0.035	500	50	3.06E-01	6.78E-04	301.47	17.363	
83	WF-94	4.337	274.3	4.78	75.4	1.823	0.035	500	50	2.66E-01	5.05E-04	236.71	15.385	
84	WF-96	4.41	293.1	4.144	90.1	1.706	0.035	500	100	2.68E-01	5.36E-04	217.52	14.749	
85	WF-97	4.459	318.8	3.84	92.4	1.568	0.035	500	50	2.56E-01	5.01E-04	188.55	13.731	
86	WF-98	4.555	536.3	5.938	95.2	0.932	0.035	500	50	1.22E-01	9.90E-05	57.63	7.591	
87	WF-99	4.404	238.3	2.645	91.3	2.098	0.03	500	50	4.12E-01	1.08E-03	280.79	16.757	
88	WF-100	7.881	147.7	1.829	80.7	3.386	0.035	500	0	8.00E-01	6.28E-03	1125.21	33.544	***

CASE NO.5

NO	D-NAME	H	A	R	B	V	N	Q	DX	FROUD	IE	TAU-0	U-*	HANT
1	WF-1-250	0.25	411.2	1.232	334.1	1.459	0.035	600	0	4.20E-01	1.98E-03	238.47	15.442	
2	WF-1-100	0.691	405.8	1.488	278.3	1.479	0.035	600	250	3.87E-01	1.58E-03	229.91	15.163	
3	WF-0	0.839	374.4	1.533	259.1	1.603	0.035	600	100	4.14E-01	1.78E-03	267.47	16.354	
4	WF-1	0.907	363.7	2.107	183.8	1.65	0.035	600	50	3.63E-01	1.23E-03	254.87	15.965	
5	WF-2	0.98	388.9	2.244	178.8	1.543	0.035	600	50	3.29E-01	9.93E-04	218.31	14.775	
6	WF-3	1.01	356.4	2.3	165.9	1.684	0.035	600	50	3.55E-01	1.14E-03	257.82	16.057	
7	WF-5	1.146	453.1	3.155	154.1	1.324	0.035	600	100	2.38E-01	4.64E-04	143.56	11.982	
8	WF-6	1.128	369.4	3.406	116.4	1.624	0.035	600	50	2.81E-01	6.31E-04	210.48	14.508	
9	WF-7	1.12	314.3	2.891	119.5	1.909	0.035	600	50	3.59E-01	1.08E-03	307.1	17.524	
10	WF-8	1.169	310.1	2.969	116.1	1.935	0.035	600	50	3.59E-01	1.08E-03	312.77	17.685	
11	WF-10	1.294	333.9	3.001	123	1.797	0.035	600	100	3.31E-01	9.14E-04	268.78	16.395	
12	WF-11	1.356	355.7	3.111	129.5	1.687	0.035	600	50	3.06E-01	7.68E-04	234.04	15.298	
13	WF-12	1.43	416.7	2.858	161.2	1.44	0.035	600	50	2.72E-01	6.26E-04	175.38	13.243	
14	WF-13	1.416	340.4	2.857	147.9	1.763	0.035	600	50	3.33E-01	9.39E-04	262.89	16.214	
15	WF-14	1.374	263.2	2.802	139.3	2.28	0.035	600	50	4.35E-01	1.61E-03	442.6	21.038	
16	WF-15 Br.	1.55	348.3	2.886	151.9	1.722	0.035	600	50	3.24E-01	8.85E-04	250.17	15.817	
17	WF-16	1.586	335.7	2.727	146.2	1.787	0.035	600	50	3.46E-01	1.03E-03	274.45	16.566	
18	WF-17	1.656	354.7	2.397	152.5	1.692	0.035	600	50	3.49E-01	1.09E-03	256.68	16.021	
19	WF-18	1.704	349.1	2.558	150.5	1.718	0.035	600	50	3.43E-01	1.03E-03	259.23	16.101	
20	WF-20	1.813	363	2.668	148.3	1.653	0.035	600	100	3.23E-01	9.05E-04	236.55	15.38	
21	WF-21	1.864	372.6	2.698	155.4	1.61	0.035	600	50	3.13E-01	8.45E-04	223.55	14.952	
22	WF-22	1.915	387.4	2.577	163.2	1.549	0.035	600	50	3.08E-01	8.32E-04	210.07	14.494	
23	WF-23	1.96	392.2	2.55	168.7	1.53	0.035	600	50	3.06E-01	8.23E-04	205.65	14.34	
24	WF-24	2	390	2.5	170.8	1.538	0.035	600	50	3.11E-01	8.55E-04	209.34	14.468	
25	WF-25	2.051	407.8	2.568	174.3	1.471	0.035	600	50	2.93E-01	7.54E-04	189.76	13.775	
26	WF-26	2.094	422	2.696	177.8	1.422	0.035	600	50	2.77E-01	6.60E-04	174.35	13.204	
27	WF-27	2.131	432.1	2.615	185.6	1.389	0.035	600	50	2.74E-01	6.56E-04	168.02	12.962	
28	WF-28	2.169	447.1	2.671	190.1	1.342	0.035	600	50	2.62E-01	5.95E-04	155.8	12.482	
29	WF-30	2.229	457.9	2.815	178.7	1.31	0.035	600	100	2.50E-01	5.29E-04	146	12.083	
30	WF-31	2.259	466.6	2.753	185	1.286	0.035	600	50	2.48E-01	5.25E-04	141.65	11.902	
31	WF-32	2.285	463	2.572	208.6	1.296	0.035	600	50	2.58E-01	5.84E-04	147.15	12.131	
32	WF-34	2.348	488.9	2.718	199.5	1.227	0.035	600	100	2.38E-01	4.86E-04	129.57	11.383	
33	WF-35	2.376	505.4	2.772	199.8	1.187	0.035	600	50	2.28E-01	4.43E-04	120.44	10.975	
34	WF-36	2.396	495.6	2.696	199.8	1.211	0.035	600	50	2.36E-01	4.79E-04	126.45	11.245	
35	WF-37	2.424	510.9	2.737	203.5	1.174	0.035	600	50	2.27E-01	4.41E-04	118.39	10.881	
36	WF-38	2.446	515.8	2.783	201.3	1.163	0.035	600	50	2.23E-01	4.23E-04	115.48	10.746	
37	WF-40	2.486	496.5	2.739	198.4	1.208	0.035	600	100	2.33E-01	4.67E-04	125.31	11.194	
38	WF-41	2.507	488.8	2.782	191.5	1.228	0.035	600	50	2.35E-01	4.72E-04	128.63	11.341	
39	WF-42	2.526	473.3	2.799	184.3	1.268	0.035	600	50	2.42E-01	4.99E-04	136.87	11.699	
40	WF-43	2.544	452.2	2.796	177.5	1.327	0.035	600	50	2.53E-01	5.47E-04	149.99	12.247	
41	WF-44	2.57	449.9	2.945	168.9	1.334	0.035	600	50	2.48E-01	5.16E-04	148.95	12.205	
42	WF-45	2.586	422.7	2.85	161.7	1.42	0.035	600	50	2.69E-01	6.11E-04	170.62	13.062	
43	WF-46	2.614	417.4	2.938	157.1	1.437	0.035	600	50	2.68E-01	6.01E-04	173.18	13.16	
44	WF-47	2.637	404.5	2.983	152.6	1.483	0.035	600	50	2.74E-01	6.28E-04	183.46	13.545	
45	WF-48	2.666	398.3	2.976	150.5	1.506	0.035	600	50	2.79E-01	6.49E-04	189.36	13.761	
46	WF-50	2.714	365.3	3.021	140.9	1.642	0.035	600	100	3.02E-01	7.57E-04	224.01	14.967	
47	WF-51	2.741	348.9	3.033	136.2	1.719	0.035	600	50	3.15E-01	8.25E-04	245.22	15.659	
48	WF-52	2.774	339.6	3.053	132.7	1.767	0.035	600	50	3.23E-01	8.63E-04	258.32	16.072	
49	WF-54	2.857	341.2	3.33	121.3	1.758	0.035	600	100	3.08E-01	7.62E-04	248.53	15.765	
50	WF-55	2.868	311.2	3.248	115.1	1.928	0.035	600	50	3.42E-01	9.47E-04	301.4	17.361	
51	WF-56	2.914	311	3.427	112.5	1.929	0.035	600	50	3.33E-01	8.82E-04	296.28	17.213	
52	WF-57	2.96	313.2	3.454	107.2	1.916	0.035	600	50	3.29E-01	8.61E-04	291.39	17.07	
53	WF-58	3.002	308	2.946	99.9	1.948	0.035	600	50	3.63E-01	1.10E-03	317.72	17.825	
54	WF-60	3.085	294.7	3.64	111.9	2.036	0.035	600	100	3.41E-01	9.07E-04	323.49	17.986	
55	WF-61	3.124	291.6	3.851	92.4	2.058	0.035	600	50	3.35E-01	8.59E-04	324.29	18.008	
56	WF-62	3.168	292.2	3.864	90	2.053	0.035	600	50	3.34E-01	8.52E-04	322.48	17.958	
57	WF-64	3.265	304.6	4.055	90.2	1.97	0.035	600	100	3.13E-01	7.35E-04	292.16	17.093	
58	WF-65 Br.	3.258	268.2	3.222	92.3	2.237	0.035	600	50	3.98E-01	1.29E-03	406.75	20.168	
59	WF-66	3.315	268.7	3.971	81.4	2.233	0.035	600	50	3.58E-01	9.71E-04	377.95	19.441	
60	WF-67	3.364	268.6	3.946	81	2.234	0.035	600	50	3.59E-01	9.80E-04	379.07	19.47	
61	WF-68	3.124	180.8	4.732	59.7	3.318	0.035	600	50	4.87E-01	1.70E-03	787.37	28.06	
62	WF-70	3.183	163.6	4.897	47.5	3.667	0.035	600	100	5.29E-01	1.98E-03	950.41	30.829	
63	WF-71	3.226	157.1	5.022	56.4	3.82	0.035	600	50	5.45E-01	2.08E-03	1023.06	31.985	
64	WF-72	3.149	139.2	4.614	74.7	4.309	0.035	600	50	6.41E-01	2.96E-03	1338.9	36.591	
65	WF-73 Br.	3.985	292.9	3.142	96.4	2.048	0.035	600	50	3.69E-01	1.12E-03	343.88	18.544	
66	WF-74	4.094	357.5	4.692	85	1.678	0.035	600	50	2.48E-01	4.39E-04	202.03	14.214	
67	WF-75	4.038	282	4.256	91.8	2.128	0.035	600	50	3.30E-01	8.04E-04	335.47	18.316	
68	WF-76	4.057	269.3	4.348	78.7	2.228	0.035	600	50	3.41E-01	8.57E-04	365.21	19.11	
69	WF-77	4.129	288.4	4.372	76.5	2.08	0.035	600	50	3.18E-01	7.42E-04	317.72	17.825	
70	WF-78	4.156	280.4	4.22	79.4	2.14	0.035	600	50	3.33E-01	8.22E-04	340.06	18.441	
71	WF-80	4.253	290.9	4.099	107.1	2.063	0.035	600	100	3.26E-01	7.95E-04	319.16	17.865	
72	WF-81	4.28	283.2	4.372	112.8	2.118	0.035	600	50	3.24E-01	7.69E-04	329.51	18.152	
73	WF-82	4.316	281.3	4.408	133	2.133	0.035	600	50	3.25E-01	7.71E-04	333.02	18.249	
74	WF-84	4.363	262.7	4.502	72	2.284	0.035	600	100	3.44E-01	8.60E-04	379.3	19.476	
75	WF-85	4.415	267.1	4.359	83	2.246	0.035	600	50	3.44E-01	8.68E-04	370.73	19.254	
76	WF-86	4.466	272.2	4.498	103.6	2.204	0.035	600	50	3.32E-01	8.02E-04	353.37	18.798	
77	WF-87	4.513	277.4	4.858	73.5	2.163	0.035	600	50	3.14E-01	6.97E-04	331.71	18.213	
78	WF-88	4.533	268.2	4.656	69.6	2.237	0.035	600	50	3.31E-01	7.89E-04	359.87	18.97	
79	WF-90	4.597	258.8	4.59	77.3	2.318	0.035	600	100	3.46E-01	8.63E-04	388.14	19.701	
80	WF-91	4.654	266.3	4.676	93.1	2.253	0.035	600	50	3.33E-01	7.96E-04	364.56	19.093	
81	WF-92	4.625	235.6	4.956	70.1	2.547	0.035	600	50	3.65E-01	9.40E-04	456.74	21.372	
82	WF-93	4.746	270.4	4.955	73.6	2.219	0.035	600	50	3.19E-01	7.14E-04	346.8	18.623	
83	WF-94	4.829	302.9	5.142	82.1	1.981	0.035	600	50	2.79E-01	5.42E-04	272.97	16.522	
84	WF-96	4.922	338.4	4.381	92.7	1.773	0.035	600	100	2.71E-01	5.37E-04	230.71	15.189	
85	WF-97	4.97	363.7	4.185	97.9	1.65	0.035	600	50	2.58E-01	4.94E-04	202.71	14.238	
86	WF-98	5.07	581.7	6.403	97.2	1.032	0.035	600	50	1.30E-01	1.10E-04	68.79	8.294	
87	WF-99	4.924	286.8	3.125	96.5	2.092	0.03	600	50	3.78E-01	8.62E-04	264.08	16.251	
88	WF-100	8.121	167.1	2.057	80.7	3.591	0.035	600	0	8.00E-01	6.04E-03	1217.58	34.894	***

CASE NO.6

NO	D-NAME	H	A	R	B	V	N	Q	DX	FROUD	IE	TAU-0	U-*	HANT
1	WF.1-250	0.25	411.2	1.232	334.1	1.702	0.035	700	0	4.90E-01	2.69E-03	324.58	18.016	
2	WF.1-100	0.811	439.3	1.605	279	1.593	0.035	700	250	4.02E-01	1.66E-03	260.35	16.135	
3	WF-0	0.966	407.1	1.649	259.1	1.719	0.035	700	100	4.28E-01	1.86E-03	300.35	17.331	
4	WF-1	1.03	386.4	2.22	183.9	1.812	0.035	700	50	3.88E-01	1.39E-03	302	17.378	
5	WF-2	1.113	412.6	2.372	178.8	1.696	0.035	700	50	3.52E-01	1.12E-03	259.08	16.096	
6	WF-3	1.146	379.1	2.422	166.5	1.847	0.035	700	50	3.79E-01	1.28E-03	304.84	17.46	
7	WF-5	1.302	477.5	3.291	155.7	1.466	0.035	700	100	2.58E-01	5.38E-04	173.46	13.17	
8	WF-6	1.277	387.2	3.517	119.9	1.808	0.035	700	50	3.08E-01	7.49E-04	258.02	16.063	
9	WF-7	1.267	332	3.008	120.1	2.109	0.035	700	50	3.88E-01	1.25E-03	369.79	19.23	
10	WF-8	1.324	328.2	3.097	116.9	2.133	0.035	700	50	3.87E-01	1.24E-03	374.77	19.359	
11	WF-10	1.471	355.6	3.149	123.3	1.968	0.035	700	100	3.54E-01	1.03E-03	317.29	17.813	
12	WF-11	1.543	379.9	3.258	130.2	1.842	0.035	700	50	3.26E-01	8.61E-04	274.91	16.58	
13	WF-12	1.631	449	3.034	161.3	1.559	0.035	700	50	2.86E-01	6.78E-04	201.55	14.197	
14	WF-13	1.615	370	2.983	150.7	1.892	0.035	700	50	3.50E-01	1.02E-03	298.44	17.275	
15	WF-14	1.57	290.2	2.835	152.3	2.412	0.035	700	50	4.58E-01	1.78E-03	493.47	22.214	
16	WF-15 Br.	1.763	380.7	3.033	152.1	1.839	0.035	700	50	3.37E-01	9.43E-04	280.39	16.745	
17	WF-16	1.8	367	2.893	146.2	1.907	0.035	700	50	3.58E-01	1.08E-03	306.47	17.506	
18	WF-17	1.875	388	2.592	152.7	1.804	0.035	700	50	3.58E-01	1.12E-03	284.41	16.864	
19	WF-18	1.924	382.3	2.746	150.8	1.831	0.035	700	50	3.53E-01	1.07E-03	287.46	16.955	
20	WF-20	2.037	396.2	2.861	148.6	1.767	0.035	700	100	3.34E-01	9.41E-04	263.95	16.246	
21	WF-21	2.091	408.1	2.889	155.7	1.715	0.035	700	50	3.22E-01	8.76E-04	248.05	15.749	
22	WF-22	2.146	425	2.782	163.4	1.647	0.035	700	50	3.15E-01	8.49E-04	231.52	15.216	
23	WF-23	2.192	431.4	2.753	168.8	1.623	0.035	700	50	3.12E-01	8.36E-04	225.5	15.017	
24	WF-24	2.234	429.9	2.704	170.8	1.628	0.035	700	50	3.16E-01	8.62E-04	228.49	15.116	
25	WF-25	2.285	448.7	2.774	174.3	1.56	0.035	700	50	2.99E-01	7.65E-04	207.94	14.42	
26	WF-26	2.33	464	2.89	177.8	1.509	0.035	700	50	2.84E-01	6.77E-04	191.82	13.85	
27	WF-27	2.369	476.2	2.815	185.6	1.47	0.035	700	50	2.80E-01	6.66E-04	183.7	13.554	
28	WF-28	2.408	492.6	2.87	190.1	1.421	0.035	700	50	2.68E-01	6.07E-04	170.59	13.061	
29	WF-30	2.469	500.7	3.014	178.9	1.398	0.035	700	100	2.57E-01	5.50E-04	162.44	12.745	
30	WF-31	2.501	511.2	2.956	185.2	1.369	0.035	700	50	2.54E-01	5.41E-04	156.82	12.523	
31	WF-32	2.53	514	2.761	209.1	1.362	0.035	700	50	2.62E-01	5.87E-04	158.73	12.599	
32	WF-34	2.592	537.6	2.914	200	1.302	0.035	700	100	2.44E-01	4.99E-04	142.48	11.937	
33	WF-35	2.621	554.4	2.973	200.1	1.263	0.035	700	50	2.34E-01	4.57E-04	133.1	11.537	
34	WF-36	2.642	544.6	2.895	200.3	1.285	0.035	700	50	2.41E-01	4.90E-04	139.14	11.796	
35	WF-37	2.67	561	2.937	204	1.248	0.035	700	50	2.33E-01	4.54E-04	130.51	11.424	
36	WF-38	2.694	565.2	2.964	204.9	1.239	0.035	700	50	2.30E-01	4.41E-04	128.2	11.323	
37	WF-40	2.734	545.8	2.953	198.4	1.283	0.035	700	100	2.38E-01	4.76E-04	137.64	11.732	
38	WF-41	2.755	536.4	2.997	191.5	1.305	0.035	700	50	2.41E-01	4.83E-04	141.82	11.909	
39	WF-42	2.774	519.2	3.011	184.6	1.348	0.035	700	50	2.48E-01	5.12E-04	151.1	12.292	
40	WF-43	2.792	496.5	3.003	178	1.41	0.035	700	50	2.60E-01	5.62E-04	165.38	12.86	
41	WF-44	2.818	492	3.149	169.4	1.423	0.035	700	50	2.56E-01	5.37E-04	165.82	12.877	
42	WF-45	2.834	462.9	3.053	162.1	1.512	0.035	700	50	2.77E-01	6.33E-04	189.24	13.757	
43	WF-46	2.862	456.5	3.139	157.6	1.533	0.035	700	50	2.76E-01	6.27E-04	192.76	13.884	
44	WF-47	2.886	442.6	3.175	153.1	1.582	0.035	700	50	2.84E-01	6.57E-04	204.31	14.294	
45	WF-48	2.916	435.9	3.17	150.7	1.606	0.035	700	50	2.88E-01	6.78E-04	210.7	14.516	
46	WF-50	2.965	400.5	3.198	141.6	1.748	0.035	700	100	3.12E-01	7.94E-04	248.88	15.776	
47	WF-51	2.992	383.2	3.213	136.3	1.827	0.035	700	50	3.26E-01	8.62E-04	271.53	16.478	
48	WF-52	3.027	373.1	3.229	132.7	1.876	0.035	700	50	3.34E-01	9.04E-04	285.91	16.909	
49	WF-54	3.112	372.1	3.498	121.7	1.881	0.035	700	100	3.21E-01	8.17E-04	279.94	16.731	
50	WF-55	3.122	340.5	3.429	115.5	2.056	0.035	700	50	3.55E-01	1.00E-03	336.44	18.342	
51	WF-56	3.17	339.8	3.581	112.7	2.06	0.035	700	50	3.48E-01	9.49E-04	332.98	18.248	
52	WF-57	3.218	340.8	3.616	107.9	2.054	0.035	700	50	3.45E-01	9.31E-04	330.02	18.167	
53	WF-58	3.262	334	3.178	100.2	2.096	0.035	700	50	3.76E-01	1.15E-03	358.6	18.937	
54	WF-60	3.351	320.5	3.73	121.3	2.184	0.035	700	100	3.61E-01	1.01E-03	369.25	19.216	
55	WF-61	3.392	315.5	3.996	94.3	2.218	0.035	700	50	3.55E-01	9.51E-04	372.33	19.296	
56	WF-62	3.44	316	4.022	91.5	2.215	0.035	700	50	3.53E-01	9.40E-04	370.49	19.248	
57	WF-64	3.546	328.4	4.218	93.2	2.132	0.035	700	100	3.32E-01	8.17E-04	337.66	18.376	
58	WF-65 Br.	3.542	292.7	3.31	96.5	2.392	0.035	700	50	4.20E-01	1.42E-03	460.76	21.465	
59	WF-66	3.601	291	4.137	83.1	2.405	0.035	700	50	3.78E-01	1.07E-03	432.62	20.8	
60	WF-67	3.655	291	4.106	82.9	2.405	0.035	700	50	3.79E-01	1.08E-03	433.71	20.826	
61	WF-68	3.317	187.4	4.903	60.7	3.734	0.035	700	50	5.39E-01	2.05E-03	985.45	31.392	
62	WF-70	3.378	169.2	5.059	48.3	4.136	0.035	700	100	5.87E-01	2.41E-03	1196.46	34.59	
63	WF-71	3.425	162.2	5.183	57.6	4.315	0.035	700	50	6.05E-01	2.54E-03	1291.52	35.938	
64	WF-72	3.302	142.6	4.72	76.1	4.91	0.035	700	50	7.22E-01	3.73E-03	1725.13	41.535	
65	WF-73 Br.	4.415	323	3.257	103.1	2.167	0.035	700	50	3.84E-01	1.19E-03	380.44	19.505	
66	WF-74	4.534	392.2	5.022	88.2	1.785	0.035	700	50	2.54E-01	4.54E-04	223.34	14.945	
67	WF-75	4.47	311.1	4.501	100	2.25	0.035	700	50	3.39E-01	8.34E-04	368.02	19.184	
68	WF-76	4.488	297.1	4.573	83.5	2.356	0.035	700	50	3.52E-01	8.96E-04	401.6	20.04	
69	WF-77	4.567	318.4	4.596	78.8	2.198	0.035	700	50	3.28E-01	7.75E-04	348.97	18.681	
70	WF-78	4.596	310.9	4.405	82.8	2.251	0.035	700	50	3.43E-01	8.60E-04	371.23	19.267	
71	WF-80	4.7	323.9	4.284	120	2.161	0.035	700	100	3.34E-01	8.22E-04	345.2	18.58	
72	WF-81	4.722	311.7	4.608	128.2	2.246	0.035	700	50	3.34E-01	8.06E-04	363.95	19.078	
73	WF-82	4.759	309.9	4.63	153.6	2.259	0.035	700	50	3.35E-01	8.10E-04	367.53	19.171	
74	WF-84	4.803	288.2	4.808	76	2.429	0.035	700	100	3.54E-01	8.91E-04	419.6	20.484	
75	WF-85	4.86	293.8	4.624	90	2.382	0.035	700	50	3.54E-01	9.02E-04	408.92	20.222	
76	WF-86	4.911	298	4.754	116.5	2.349	0.035	700	50	3.44E-01	8.46E-04	394.05	19.851	
77	WF-87	4.961	303.3	5.155	78.4	2.308	0.035	700	50	3.25E-01	7.33E-04	370.24	19.242	
78	WF-88	4.981	293.6	4.989	73.4	2.384	0.035	700	50	3.41E-01	8.17E-04	399.46	19.987	
79	WF-90	5.046	283.7	4.903	83.7	2.467	0.035	700	100	3.56E-01	8.95E-04	430.16	20.74	
80	WF-91	5.105	291	4.963	103.1	2.406	0.035	700	50	3.45E-01	8.37E-04	407.32	20.182	
81	WF-92	5.063	255.6	5.286	75.7	2.739	0.035	700	50	3.81E-01	9.98E-04	517	22.738	
82	WF-93	5.2	294.1	5.346	79.4	2.38	0.035	700	50	3.29E-01	7.42E-04	388.93	19.721	
83	WF-94	5.292	329.8	5.483	88.5	2.123	0.035	700	50	2.90E-01	5.71E-04	306.76	17.514	
84	WF-96	5.406	381.1	4.603	95.2	1.837	0.035	700	100	2.74E-01	5.40E-04	243.54	15.606	
85	WF-97	5.452	406.1	4.51	103	1.724	0.035	700	50	2.59E-01	4.88E-04	215.88	14.693	
86	WF-98	5.555	624.4	6.842	99.1	1.121	0.035	700	50	1.37E-01	1.19E-04	79.47	8.915	
87	WF-99	5.416	334.8	3.567	98.9	2.091	0.03	700	50	3.54E-01	7.22E-04	252.37	15.886	
88	WF-100	8.349	185.5	2.272	80.7	3.774	0.035	700	0	8.00E-01	5.84E-03	1300.96	36.069 ***	

CASE NO.7

NO	D-NAME	H	A	R	B	V	N	Q	DX	FROUD	IE	TAU-0	U-*	HANT
1	WF-1-250	0.25	411.2	1.232	334.1	1.946	0.035	800	0	5.60E-01	3.51E-03	423.95	20.59	
2	WF-1-100	0.945	476.6	1.735	279.7	1.679	0.035	800	250	4.07E-01	1.66E-03	281.52	16.779	
3	WF-0	1.098	441.4	1.775	259.1	1.812	0.035	800	100	4.35E-01	1.87E-03	325.69	18.047	
4	WF-1	1.155	409.3	2.338	183.9	1.955	0.035	800	50	4.08E-01	1.51E-03	345.56	18.589	
5	WF-2	1.247	436.4	2.501	178.8	1.833	0.035	800	50	3.70E-01	1.21E-03	297.18	17.239	
6	WF-3	1.281	401.5	2.543	167.1	1.992	0.035	800	50	3.99E-01	1.40E-03	349.1	18.684	
7	WF-5	1.454	501.3	3.425	157.3	1.596	0.035	800	100	2.76E-01	6.04E-04	202.83	14.242	
8	WF-6	1.421	404.4	3.624	123.3	1.978	0.035	800	50	3.32E-01	8.61E-04	305.85	17.488	
9	WF-7	1.409	349.1	3.121	120.7	2.292	0.035	800	50	4.14E-01	1.41E-03	431.49	20.772	
10	WF-8	1.473	345.6	3.22	117.8	2.315	0.035	800	50	4.12E-01	1.38E-03	435.53	20.869	
11	WF-10	1.642	376.8	3.294	123.9	2.123	0.035	800	100	3.74E-01	1.13E-03	363.71	19.071	
12	WF-11	1.723	403.5	3.396	131.8	1.982	0.035	800	50	3.44E-01	9.43E-04	313.9	17.717	
13	WF-12	1.824	480.2	3.206	161.3	1.666	0.035	800	50	2.97E-01	7.19E-04	225.99	15.033	
14	WF-13	1.806	399.2	3.109	153.5	2.004	0.035	800	50	3.63E-01	1.08E-03	330.26	18.173	
15	WF-14	1.764	319.7	2.935	152.3	2.502	0.035	800	50	4.67E-01	1.83E-03	525.02	22.913	
16	WF-15 Br.	1.96	410.8	3.171	152.4	1.947	0.035	800	50	3.49E-01	9.98E-04	309.93	17.605	
17	WF-16	1.999	396.1	3.047	146.2	2.02	0.035	800	50	3.70E-01	1.13E-03	337.75	18.378	
18	WF-17	2.078	419.1	2.774	152.9	1.909	0.035	800	50	3.66E-01	1.15E-03	311.29	17.643	
19	WF-18	2.129	413.1	2.927	150.8	1.937	0.035	800	50	3.62E-01	1.10E-03	314.75	17.741	
20	WF-20	2.244	427.1	3.05	148.6	1.873	0.035	800	100	3.43E-01	9.72E-04	290.46	17.043	
21	WF-21	2.302	441	3.074	155.7	1.814	0.035	800	50	3.31E-01	9.02E-04	271.73	16.484	
22	WF-22	2.36	460	2.977	163.4	1.739	0.035	800	50	3.22E-01	8.65E-04	252.34	15.885	
23	WF-23	2.408	467.9	2.945	168.8	1.71	0.035	800	50	3.18E-01	8.49E-04	244.88	15.649	
24	WF-24	2.451	466.9	2.894	170.8	1.713	0.035	800	50	3.22E-01	8.72E-04	247.3	15.726	
25	WF-25	2.504	486.7	2.966	174.3	1.644	0.035	800	50	3.05E-01	7.77E-04	225.71	15.024	
26	WF-26	2.549	503.1	3.071	177.8	1.59	0.035	800	50	2.90E-01	6.94E-04	208.86	14.452	
27	WF-27	2.591	517.3	3.001	185.6	1.546	0.035	800	50	2.85E-01	6.77E-04	199.02	14.108	
28	WF-28	2.631	534.9	3.056	190.1	1.495	0.035	800	50	2.73E-01	6.18E-04	185.03	13.603	
29	WF-30	2.693	540.6	3.199	179.1	1.48	0.035	800	100	2.64E-01	5.69E-04	178.41	13.357	
30	WF-31	2.726	552.9	3.145	185.4	1.447	0.035	800	50	2.61E-01	5.57E-04	171.55	13.098	
31	WF-32	2.758	561.5	2.938	209.5	1.425	0.035	800	50	2.66E-01	5.91E-04	170.15	13.044	
32	WF-34	2.82	583.1	3.096	200.5	1.372	0.035	800	100	2.49E-01	5.11E-04	155.02	12.451	
33	WF-35	2.85	600.1	3.16	200.3	1.333	0.035	800	50	2.40E-01	4.69E-04	145.38	12.057	
34	WF-36	2.871	590.4	3.082	200.9	1.355	0.035	800	50	2.47E-01	5.02E-04	151.46	12.307	
35	WF-37	2.901	607.8	3.124	204.5	1.316	0.035	800	50	2.38E-01	4.65E-04	142.27	11.928	
36	WF-38	2.925	611.2	3.133	208.2	1.309	0.035	800	50	2.36E-01	4.58E-04	140.55	11.855	
37	WF-40	2.966	591.8	3.154	198.4	1.352	0.035	800	100	2.43E-01	4.84E-04	149.58	12.23	
38	WF-41	2.987	580.8	3.198	191.5	1.377	0.035	800	50	2.46E-01	4.93E-04	154.62	12.434	
39	WF-42	3.006	562	3.209	184.8	1.423	0.035	800	50	2.54E-01	5.24E-04	164.9	12.841	
40	WF-43	3.024	537.8	3.196	178.4	1.487	0.035	800	50	2.66E-01	5.76E-04	180.32	13.428	
41	WF-44	3.049	531.2	3.339	169.8	1.506	0.035	800	50	2.63E-01	5.57E-04	182.19	13.498	
42	WF-45	3.065	500.3	3.242	162.6	1.599	0.035	800	50	2.84E-01	6.53E-04	207.42	14.402	
43	WF-46	3.093	493	3.327	158.1	1.623	0.035	800	50	2.84E-01	6.50E-04	211.79	14.553	
44	WF-47	3.118	478.1	3.354	153.6	1.673	0.035	800	50	2.92E-01	6.83E-04	224.59	14.986	
45	WF-48	3.149	471	3.351	151	1.699	0.035	800	50	2.96E-01	7.05E-04	231.47	15.214	
46	WF-50	3.199	433.3	3.363	142.3	1.846	0.035	800	100	3.22E-01	8.29E-04	273.14	16.527	
47	WF-51	3.226	415	3.38	136.5	1.928	0.035	800	50	3.35E-01	8.97E-04	297.23	17.24	
48	WF-52	3.262	404.3	3.392	132.7	1.979	0.035	800	50	3.43E-01	9.41E-04	312.89	17.689	
49	WF-54	3.349	400.7	3.654	122	1.997	0.035	800	100	3.34E-01	8.68E-04	310.69	17.626	
50	WF-55	3.359	367.9	3.604	116	2.175	0.035	800	50	3.66E-01	1.05E-03	370.27	19.242	
51	WF-56	3.408	366.5	3.724	112.9	2.183	0.035	800	50	3.61E-01	1.01E-03	369.07	19.211	
52	WF-57	3.458	366.3	3.765	108.7	2.184	0.035	800	50	3.60E-01	9.97E-04	368.04	19.184	
53	WF-58	3.502	358.1	3.392	100.5	2.234	0.035	800	50	3.88E-01	1.20E-03	398.74	19.969	
54	WF-60	3.597	344.4	3.813	130	2.323	0.035	800	100	3.80E-01	1.11E-03	414.58	20.361	
55	WF-61	3.639	337.7	4.131	96.1	2.369	0.035	800	50	3.72E-01	1.04E-03	419.89	20.491	
56	WF-62	3.691	338	4.168	92.8	2.367	0.035	800	50	3.70E-01	1.02E-03	418.02	20.446	
57	WF-64	3.807	350.4	4.368	96.1	2.283	0.035	800	100	3.49E-01	8.94E-04	382.76	19.564	
58	WF-65 Br.	3.806	315.4	3.391	100.4	2.537	0.035	800	50	4.40E-01	1.55E-03	514.11	22.674	
59	WF-66	3.866	311.7	4.29	84.6	2.566	0.035	800	50	3.96E-01	1.16E-03	486.64	22.06	
60	WF-67	3.924	311.9	4.254	84.7	2.565	0.035	800	50	3.97E-01	1.17E-03	487.59	22.081	
61	WF-68	3.472	192.8	5.041	61.6	4.15	0.035	800	50	5.90E-01	2.44E-03	1205.67	34.723	
62	WF-70	3.535	173.7	5.19	48.9	4.605	0.035	800	100	6.46E-01	2.89E-03	1470.41	38.346	
63	WF-71	3.586	166.4	5.313	58.5	4.807	0.035	800	50	6.66E-01	3.05E-03	1589.92	39.874	
64	WF-72	3.397	144.7	4.786	77	5.53	0.035	800	50	8.08E-01	4.65E-03	2178.73	46.677	
65	WF-73 Br.	4.843	352.8	3.372	109.8	2.268	0.035	800	50	3.95E-01	1.25E-03	411.71	20.291	
66	WF-74	4.968	426.5	5.349	91.4	1.876	0.035	800	50	2.59E-01	4.61E-04	241.53	15.541	
67	WF-75	4.898	340	4.744	108.3	2.353	0.035	800	50	3.45E-01	8.51E-04	395.47	19.886	
68	WF-76	4.915	324.6	4.796	88.2	2.465	0.035	800	50	3.60E-01	9.20E-04	432.53	20.797	
69	WF-77	4.998	348	4.817	81.2	2.299	0.035	800	50	3.35E-01	7.96E-04	375.68	19.382	
70	WF-78	5.029	340.9	4.586	86.3	2.346	0.035	800	50	3.50E-01	8.85E-04	397.82	19.946	
71	WF-80	5.139	356.4	4.466	132.6	2.245	0.035	800	100	3.39E-01	8.39E-04	367.35	19.166	
72	WF-81	5.155	339.6	4.839	143.3	2.356	0.035	800	50	3.42E-01	8.31E-04	393.96	19.848	
73	WF-82	5.193	337.9	4.847	173.8	2.368	0.035	800	50	3.44E-01	8.37E-04	397.73	19.943	
74	WF-84	5.234	313.1	5.107	80	2.555	0.035	800	100	3.61E-01	9.09E-04	455.01	21.331	
75	WF-85	5.294	319.9	4.883	96.8	2.501	0.035	800	50	3.62E-01	9.25E-04	442.54	21.037	
76	WF-86	5.345	323.1	5.003	129.2	2.476	0.035	800	50	3.54E-01	8.78E-04	430.43	20.747	
77	WF-87	5.396	328.5	5.444	83.1	2.436	0.035	800	50	3.33E-01	7.59E-04	404.81	20.12	
78	WF-88	5.416	318.2	5.313	77.1	2.514	0.035	800	50	3.48E-01	8.35E-04	434.82	20.852	
79	WF-90	5.481	307.8	5.206	90	2.599	0.035	800	100	3.64E-01	9.17E-04	467.81	21.629	
80	WF-91	5.541	314.9	5.241	112.7	2.541	0.035	800	50	3.55E-01	8.69E-04	446.09	21.121	
81	WF-92	5.486	274.9	5.605	81.1	2.91	0.035	800	50	3.93E-01	1.04E-03	572.46	23.926	
82	WF-93	5.639	317	5.723	84.9	2.524	0.035	800	50	3.37E-01	7.62E-04	427.42	20.674	
83	WF-94	5.739	355.7	5.812	94.6	2.249	0.035	800	50	2.98E-01	5.93E-04	337.77	18.378	
84	WF-96	5.871	422.2	4.817	97.5	1.895	0.035	800	100	2.76E-01	5.41E-04	255.27	15.977	
85	WF-97	5.916	446.9	4.824	108	1.79	0.035	800	50	2.60E-01	4.82E-04	227.67	15.089	
86	WF-98	6.021	665.6	7.264	100.9	1.202	0.035	800	50	1.43E-01	1.26E-04	89.56	9.464	
87	WF-99	5.889	382	3.985	101.1	2.094	0.03	800	50	3.35E-01	6.25E-04	243.96	15.619	
88	WF-100	8.567	203	2.477	80.7	3.94	0.035	800	0	8.00E-01	5.67E-03	1377.57	37.116	***

H-Q HYO

NO	D-NAME	H	Q
1	WF.1-250	0.25	0
		0.25	200
		0.25	300
		0.25	400
		0.25	500
		0.25	600
		0.25	700
		0.25	800
2	WF.1-100	0.25	0
		0.323	200
		0.397	300
		0.485	400
		0.583	500
		0.691	600
		0.811	700
		0.945	800
3	WF-0	0.25	0
		0.368	200
		0.478	300
		0.596	400
		0.717	500
		0.839	600
		0.966	700
		1.098	800
4	WF-1	0.25	0
		0.397	200
		0.525	300
		0.655	400
		0.783	500
		0.907	600
		1.03	700
		1.155	800
5	WF-2	0.25	0
		0.416	200
		0.559	300
		0.704	400
		0.844	500
		0.98	600
		1.113	700
		1.247	800
6	WF-3	0.25	0
		0.426	200
		0.576	300
		0.726	400
		0.871	500
		1.01	600
		1.146	700
		1.281	800
7	WF-5	0.25	0
		0.462	200
		0.639	300
		0.815	400
		0.984	500
		1.146	600
		1.302	700
		1.454	800
8	WF-6	0.25	0
		0.461	200
		0.636	300
		0.809	400
		0.972	500
		1.128	600
		1.277	700
		1.421	800
9	WF-7	0.25	0
		0.459	200
		0.633	300
		0.803	400
		0.965	500
		1.12	600
		1.267	700
		1.409	800
10	WF-8	0.25	0
		0.471	200
		0.654	300
		0.834	400
		1.005	500
		1.169	600
		1.324	700
		1.473	800
11	WF-10	0.25	0
		0.5	200
		0.707	300
		0.912	400
		1.108	500
		1.294	600
		1.471	700
		1.642	800
12	WF-11	0.25	0
		0.515	200
		0.735	300
		0.952	400
		1.16	500
		1.356	600
		1.543	700
		1.723	800
13	WF-12	0.25	0
		0.533	200
		0.767	300
		0.998	400
		1.22	500
		1.43	600
		1.631	700
		1.824	800
14	WF-13	0.25	0
		0.531	200
		0.762	300
		0.99	400
		1.209	500
		1.416	600
		1.615	700
		1.806	800
15	WF-14	0.25	0
		0.525	200
		0.745	300
		0.958	400
		1.17	500
		1.374	600
		1.57	700
		1.764	800
16	WF-15 Br.	0.25	0
		0.563	200
		0.822	300
		1.081	400
		1.322	500
		1.55	600
		1.763	700
		1.96	800
17	WF-16	0.25	0
		0.578	200
		0.846	300
		1.111	400
		1.356	500
		1.586	600
		1.8	700
		1.999	800
18	WF-17	0.25	0
		0.612	200
		0.895	300
		1.169	400
		1.421	500
		1.656	600
		1.875	700
		2.078	800
19	WF-18	0.25	0
		0.64	200
		0.933	300
		1.213	400
		1.468	500
		1.704	600
		1.924	700
		2.129	800
20	WF-20	0.25	0
		0.701	200
		1.017	300
		1.308	400
		1.571	500
		1.813	600
		2.037	700
		2.244	800
21	WF-21	0.25	0
		0.727	200
		1.052	300
		1.35	400
		1.618	500
		1.864	600
		2.091	700
		2.302	800
22	WF-22	0.25	0
		0.755	200
		1.09	300
		1.394	400
		1.666	500
		1.915	600
		2.146	700
		2.36	800
23	WF-23	0.25	0
		0.783	200
		1.126	300
		1.433	400
		1.708	500
		1.96	600
		2.192	700
		2.408	800
24	WF-24	0.25	0
		0.81	200
		1.16	300
		1.471	400
		1.748	500
		2	600
		2.234	700
		2.451	800
25	WF-25	0.25	0
		0.848	200
		1.204	300
		1.518	400
		1.796	500
		2.051	600
		2.285	700
		2.504	800
26	WF-26	0.25	0
		0.877	200
		1.239	300
		1.556	400
		1.837	500
		2.094	600
		2.33	700
		2.549	800
27	WF-27	0.25	0
		0.899	200
		1.268	300
		1.589	400
		1.873	500
		2.131	600
		2.369	700
		2.591	800

28 WF-28	0.25	0
	0.924	200
	1.299	300
	1.623	400
	1.909	500
	2.169	600
	2.408	700
	2.631	800
29 WF-30	0.25	0
	0.97	200
	1.353	300
	1.681	400
	1.969	500
	2.229	600
	2.469	700
	2.693	800
30 WF-31	0.25	0
	0.988	200
	1.375	300
	1.706	400
	1.996	500
	2.259	600
	2.501	700
	2.726	800
31 WF-32	0.25	0
	1.002	200
	1.392	300
	1.727	400
	2.02	500
	2.285	600
	2.53	700
	2.758	800
32 WF-34	0.25	0
	1.052	200
	1.449	300
	1.787	400
	2.082	500
	2.348	600
	2.592	700
	2.82	800
33 WF-35	0.25	0
	1.073	200
	1.474	300
	1.813	400
	2.11	500
	2.376	600
	2.621	700
	2.85	800
34 WF-36	0.25	0
	1.088	200
	1.491	300
	1.832	400
	2.129	500
	2.396	600
	2.642	700
	2.871	800
35 WF-37	0.25	0
	1.108	200
	1.514	300
	1.857	400
	2.156	500
	2.424	600
	2.67	700
	2.901	800
36 WF-38	0.25	0
	1.128	200
	1.536	300
	1.878	400
	2.178	500
	2.446	600
	2.694	700
	2.925	800
37 WF-40	0.25	0
	1.157	200
	1.569	300
	1.914	400
	2.216	500
	2.486	600
	2.734	700
	2.966	800
38 WF-41	0.25	0
	1.176	200
	1.59	300
	1.935	400
	2.237	500
	2.507	600
	2.755	700
	2.987	800
39 WF-42	0.25	0
	1.193	200
	1.609	300
	1.954	400
	2.256	500
	2.526	600
	2.774	700
	3.006	800
40 WF-43	0.25	0
	1.209	200
	1.626	300
	1.972	400
	2.274	500
	2.544	600
	2.792	700
	3.024	800
41 WF-44	0.25	0
	1.233	200
	1.651	300
	1.998	400
	2.299	500
	2.57	600
	2.818	700
	3.049	800
42 WF-45	0.25	0
	1.245	200
	1.666	300
	2.014	400
	2.316	500
	2.586	600
	2.834	700
	3.065	800
43 WF-46	0.25	0
	1.268	200
	1.691	300
	2.04	400
	2.343	500
	2.614	600
	2.862	700
	3.093	800
44 WF-47	0.25	0
	1.284	200
	1.711	300
	2.062	400
	2.366	500
	2.637	600
	2.886	700
	3.118	800
45 WF-48	0.25	0
	1.306	200
	1.736	300
	2.088	400
	2.393	500
	2.666	600
	2.916	700
	3.149	800
46 WF-50	0.25	0
	1.335	200
	1.773	300
	2.131	400
	2.439	500
	2.714	600
	2.965	700
	3.199	800
47 WF-51	0.25	0
	1.352	200
	1.794	300
	2.155	400
	2.465	500
	2.741	600
	2.992	700
	3.226	800
48 WF-52	0.25	0
	1.377	200
	1.823	300
	2.185	400
	2.497	500
	2.774	600
	3.027	700
	3.262	800
49 WF-54	0.25	0
	1.432	200
	1.889	300
	2.26	400
	2.578	500
	2.857	600
	3.112	700
	3.349	800
50 WF-55	0.25	0
	1.44	200
	1.899	300
	2.271	400
	2.589	500
	2.868	600
	3.122	700
	3.359	800
51 WF-56	0.25	0
	1.475	200
	1.935	300
	2.31	400
	2.632	500
	2.914	600
	3.17	700
	3.408	800
52 WF-57	0.25	0
	1.496	200
	1.97	300
	2.351	400
	2.676	500
	2.96	600
	3.218	700
	3.458	800
53 WF-58	0.25	0
	1.532	200
	2.008	300
	2.391	400
	2.717	500
	3.002	600
	3.262	700
	3.502	800
54 WF-60	0.25	0
	1.585	200
	2.069	300
	2.458	400
	2.792	500
	3.085	600
	3.351	700
	3.597	800

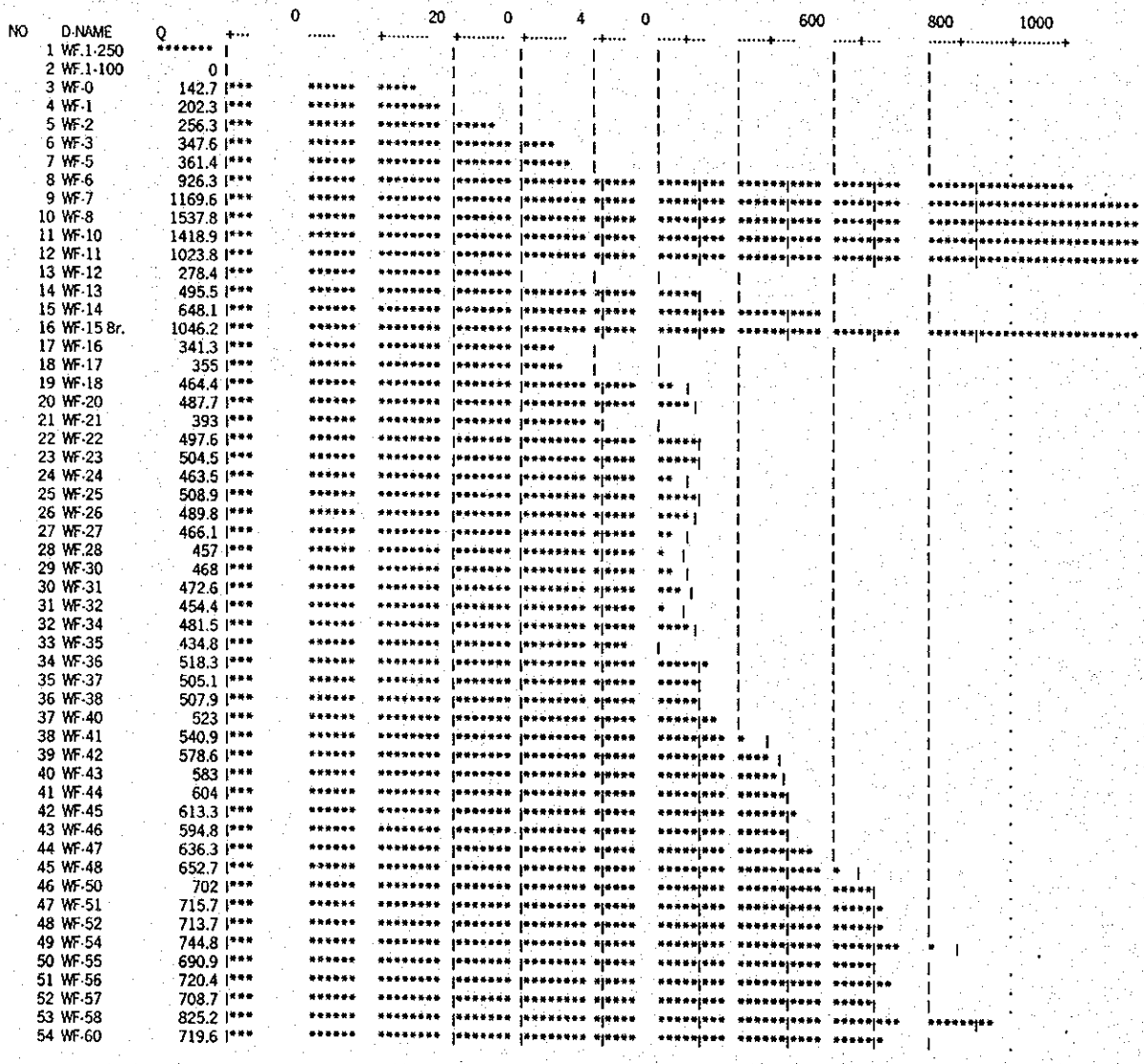
55 WF-61	0.25	0
	1.604	200
	2.097	300
	2.493	400
	2.829	500
	3.124	600
	3.392	700
	3.639	800
56 WF-62	0.25	0
	1.628	200
	2.126	300
	2.528	400
	2.869	500
	3.168	600
	3.44	700
	3.691	800
57 WF-64	0.25	0
	1.675	200
	2.189	300
	2.603	400
	2.955	500
	3.265	600
	3.546	700
	3.807	800
58 WF-65 Br.	0.25	0
	1.673	200
	2.178	300
	2.591	400
	2.945	500
	3.258	600
	3.542	700
	3.806	800
59 WF-66	0.25	0
	1.702	200
	2.223	300
	2.645	400
	3.001	500
	3.315	600
	3.601	700
	3.866	800
60 WF-67	0.25	0
	1.725	200
	2.255	300
	2.682	400
	3.044	500
	3.364	600
	3.655	700
	3.924	800
61 WF-68	0.25	0
	1.725	200
	2.221	300
	2.595	400
	2.887	500
	3.124	600
	3.317	700
	3.472	800
62 WF-70	0.25	0
	1.76	200
	2.265	300
	2.646	400
	2.944	500
	3.183	600
	3.378	700
	3.535	800
63 WF-71	0.25	0
	1.78	200
	2.293	300
	2.68	400
	2.982	500
	3.226	600
	3.425	700
	3.586	800
64 WF-72	0.25	0
	1.785	200
	2.289	300
	2.66	400
	2.939	500
	3.149	600
	3.302	700
	3.397	800
65 WF-73 Br.	0.25	0
	1.899	200
	2.53	300
	3.064	400
	3.539	500
	3.985	600
	4.415	700
	4.843	800
66 WF-74	0.25	0
	1.959	200
	2.604	300
	3.15	400
	3.638	500
	4.094	600
	4.534	700
	4.968	800
67 WF-75	0.25	0
	1.937	200
	2.571	300
	3.11	400
	3.589	500
	4.038	600
	4.47	700
	4.898	800
68 WF-76	0.25	0
	1.955	200
	2.59	300
	3.129	400
	3.609	500
	4.057	600
	4.488	700
	4.915	800
69 WF-77	0.25	0
	1.99	200
	2.639	300
	3.187	400
	3.674	500
	4.129	600
	4.567	700
	4.998	800
70 WF-78	0.25	0
	2.007	200
	2.654	300
	3.206	400
	3.698	500
	4.156	600
	4.596	700
	5.029	800
71 WF-80	0.25	0
	2.065	200
	2.722	300
	3.285	400
	3.786	500
	4.253	600
	4.7	700
	5.139	800
72 WF-81	0.25	0
	2.096	200
	2.765	300
	3.323	400
	3.819	500
	4.28	600
	4.722	700
	5.155	800
73 WF-82	0.25	0
	2.12	200
	2.791	300
	3.352	400
	3.852	500
	4.316	600
	4.759	700
	5.193	800
74 WF-84	0.25	0
	2.16	200
	2.841	300
	3.403	400
	3.901	500
	4.363	600
	4.803	700
	5.234	800
75 WF-85	0.25	0
	2.193	200
	2.876	300
	3.444	400
	3.948	500
	4.415	600
	4.86	700
	5.294	800
76 WF-86	0.25	0
	2.231	200
	2.922	300
	3.492	400
	3.998	500
	4.466	600
	4.911	700
	5.345	800
77 WF-87	0.25	0
	2.26	200
	2.956	300
	3.531	400
	4.041	500
	4.513	600
	4.961	700
	5.396	800
78 WF-88	0.25	0
	2.274	200
	2.974	300
	3.55	400
	4.062	500
	4.533	600
	4.981	700
	5.416	800
79 WF-90	0.25	0
	2.326	200
	3.028	300
	3.609	400
	4.123	500
	4.597	600
	5.046	700
	5.481	800
80 WF-91	0.25	0
	2.364	200
	3.074	300
	3.659	400
	4.177	500
	4.654	600
	5.105	700
	5.541	800
81 WF-92	0.25	0
	2.376	200
	3.08	300
	3.654	400
	4.161	500
	4.625	600
	5.063	700
	5.486	800

	0.25	0		0.25	0		0.25	0
82 WF-93			83 WF-94			84 WF-96		
	2.427	200		2.465	200		2.496	200
	3.148	300		3.199	300		3.233	300
	3.741	400		3.802	400		3.853	400
	4.265	500		4.337	500		4.41	500
	4.746	600		4.829	600		4.922	600
	5.2	700		5.292	700		5.406	700
	5.639	800		5.739	800		5.871	800
	0.25	0		0.25	0		1.54	0
85 WF-97			86 WF-98			87 WF-99		
	2.526	200		2.602	200		2.654	200
	3.28	300		3.367	300		3.191	300
	3.905	400		3.997	400		3.838	400
	4.459	500		4.555	500		4.404	500
	4.97	600		5.07	600		4.924	600
	5.452	700		5.555	700		5.416	700
	5.916	800		6.021	800		5.889	800
	4.43	0						
88 WF-100								
	7.016	200						
	7.339	300						
	7.624	400						
	7.881	500						
	8.121	600						
	8.349	700						
	8.567	800						

RYUKA NOU RYOKU HYO Top of Dike

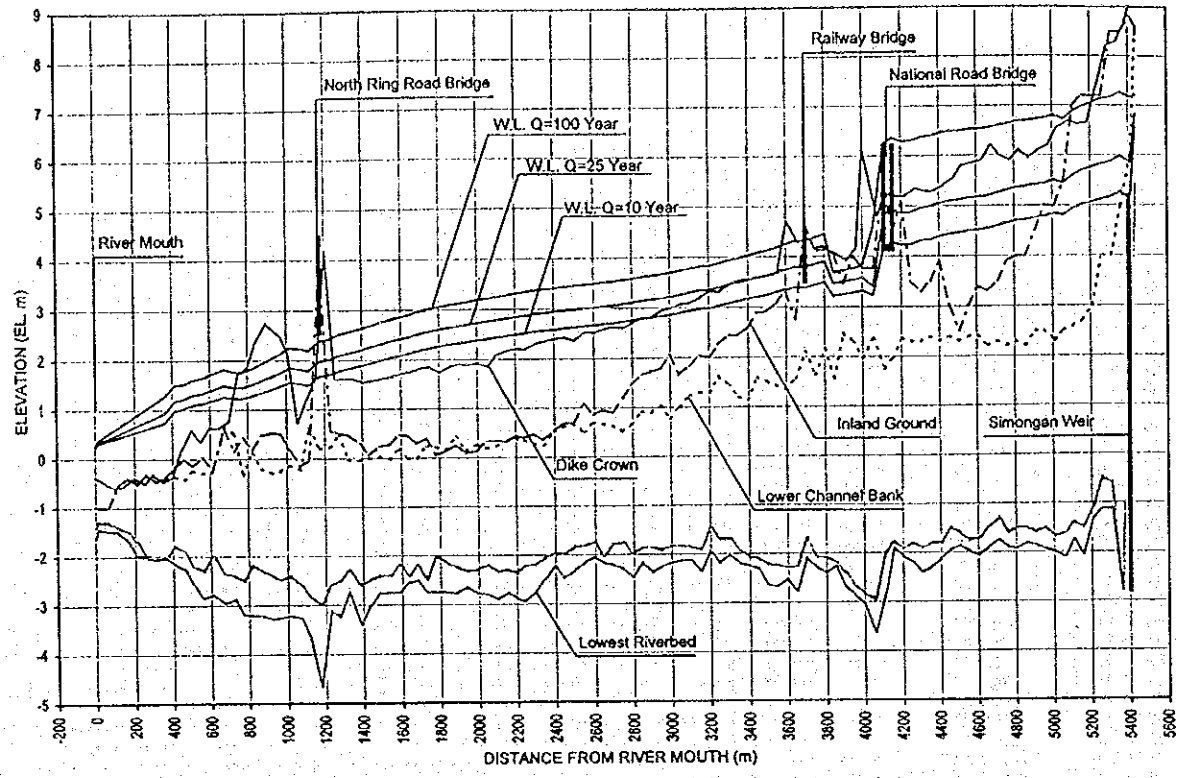
NO	D-NAME	H	Q	NO	D-NAME	H	Q	NO	D-NAME	H	Q
1	WF-1-250	0.25	*******	2	WF-1-100	0.25	0	3	WF-0	0.35	142.7
4	WF-1	0.4	202.3	5	WF-2	0.5	256.3	6	WF-3	0.65	347.6
7	WF-5	0.75	361.4	8	WF-6	1.59	926.3	9	WF-7	1.87	1169.6
10	WF-8	2.37	1537.8	11	WF-10	2.52	1418.9	12	WF-11	2.09	1023.8
13	WF-12	0.72	278.4	14	WF-13	1.2	495.5	15	WF-14	1.47	648.1
16	WF-15 Br.	2.4	1046.2	17	WF-16	0.96	341.3	18	WF-17	1.05	355
19	WF-18	1.38	464.4	20	WF-20	1.54	487.7	21	WF-21	1.33	393
22	WF-22	1.66	497.6	23	WF-23	1.72	504.5	24	WF-24	1.65	463.5
25	WF-25	1.82	508.9	26	WF-26	1.81	489.8	27	WF-27	1.78	466.1
28	WF.28	1.79	457	29	WF-30	1.88	468	30	WF-31	1.92	472.6
31	WF-32	1.89	454.4	32	WF-34	2.03	481.5	33	WF-35	1.92	434.8
34	WF-36	2.18	518.3	35	WF-37	2.17	505.1	36	WF-38	2.2	507.9
37	WF-40	2.28	523	38	WF-41	2.35	540.9	39	WF-42	2.47	578.6
40	WF-43	2.5	583	41	WF-44	2.58	604	42	WF-45	2.62	613.3
43	WF-46	2.6	594.8	44	WF-47	2.73	636.3	45	WF-48	2.8	652.7
46	WF-50	2.97	702	47	WF-51	3.03	715.7	48	WF-52	3.06	713.7
49	WF-54	3.22	744.8	50	WF-55	3.1	690.9	51	WF-56	3.22	720.4
52	WF-57	3.24	708.7	53	WF-58	3.56	825.2	54	WF-60	3.4	719.6
55	WF-61	3.54	759.1	56	WF-62	3.59	758.9	57	WF-64	3.79	793.2
58	WF-65 Br.	3.5	684.7	59	WF-66	4.28	970	60	WF-67	4.35	971.6
61	WF-68	4.12	1290.5	62	WF-70	4.05	1176.3	63	WF-71	3.93	1035.7
64	WF-72	4.14	1807.1	65	WF-73 Br.	4.14	635.2	66	WF-74	4.51	694.5
67	WF-75	4.14	623	68	WF-76	4.38	674.2	69	WF-77	4.49	681.9
70	WF-78	4.59	698.7	71	WF-80	5.03	774.6	72	WF-81	5.18	806.1
73	WF-82	5.47	867.2	74	WF-84	5.57	882.8	75	WF-85	5.56	864.7
76	WF-86	5.65	874.4	77	WF-87	5.83	906.3	78	WF-88	5.73	876.3
79	WF-90	5.63	835.6	80	WF-91	5.71	840.4	81	WF-92	5.87	896.5
82	WF-93	6.06	902.5	83	WF-94	6.69	1034.9	84	WF-96	6.28	893.5
85	WF-97	6.63	966.8	86	WF-98	6.69	955	87	WF-99	7.42	1169.3
88	WF-100	9.4	1244.5								

RYUKA NOU RYOKU HYO Top of Dike

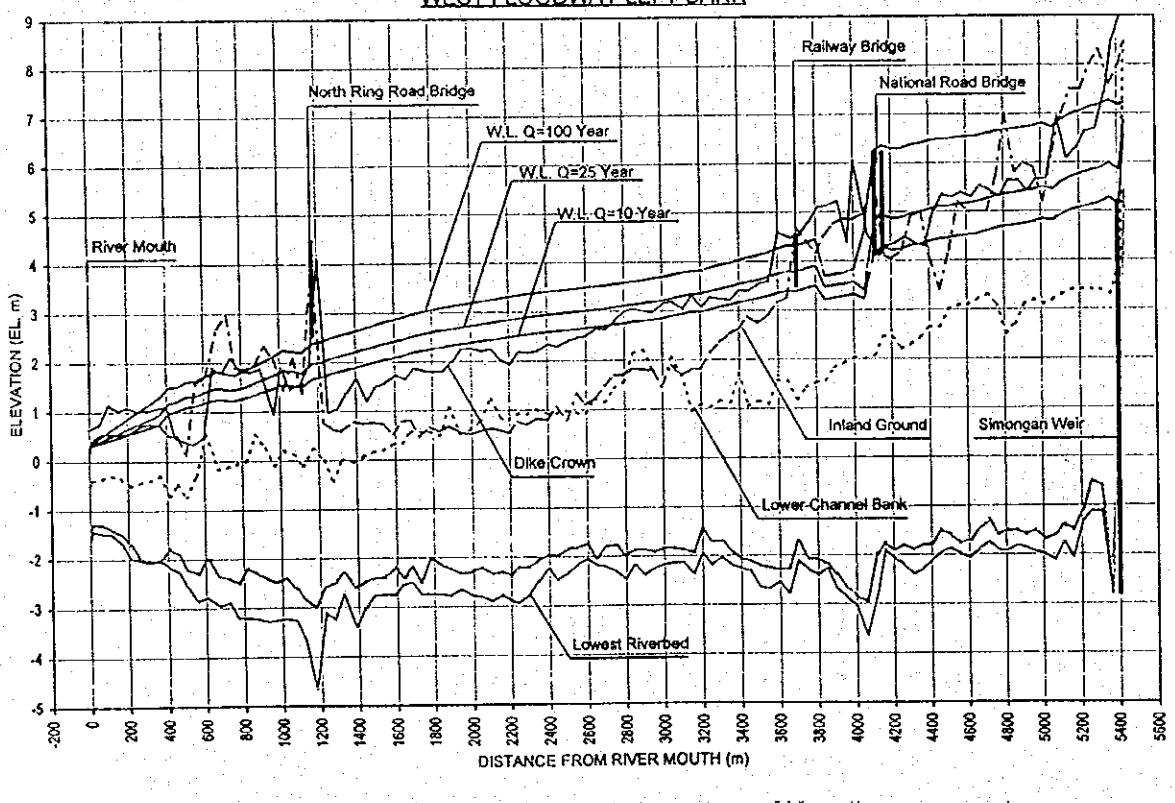


NO	D-NAME	Q
55	WF-61	759.1
56	WF-62	758.9
57	WF-64	793.2
58	WF-65 Br.	684.7
59	WF-66	970
60	WF-67	971.6
61	WF-68	1290.5
62	WF-70	1176.3
63	WF-71	1035.7
64	WF-72	1807.1
65	WF-73 Br.	635.2
66	WF-74	694.5
67	WF-75	623
68	WF-76	674.2
69	WF-77	681.9
70	WF-78	698.7
71	WF-80	774.6
72	WF-81	806.1
73	WF-82	867.2
74	WF-84	882.8
75	WF-85	864.7
76	WF-86	874.4
77	WF-87	906.3
78	WF-88	876.3
79	WF-90	835.6
80	WF-91	840.4
81	WF-92	896.5
82	WF-93	902.5
83	WF-94	1034.9
84	WF-96	893.5
85	WF-97	966.8
86	WF-98	955
87	WF-99	1169.3
88	WF-100	1244.5

WEST FLOODWAY RIGHT BANK



WEST FLOODWAY LEFT BANK



THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig.
JAPAN INTERNATIONAL COOPERATION AGENCY	


FLDWAY-1
FLDWAY-2
Discharge (m 3/sec)
Distance from River Mouth (m)
0
200
400
600
800
1000
1200
1400
1600
0
350
450
600
700
850
950
1050
1150
1250
1400
1500
1600
1700
1850
1950
2100
2200
2350
2450
2550
2650
2750
2900
3050
3150
3250
3400
3550
3650
3750
3900
4000
4100
4200
4350
4450
4600
4700
4850
4950
5050
5200
5300