Bore hole BS- 1

Date: 27-28.06.03

Drilling method:
rotary by single tube core barrel ∅ 108 mm & SPT-TD

X = 6181477.57
Y = 316353.75
Bottom altitude, m = - 7.20

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	7.50	-7.20		Water				
1.70	1.70	-8.90		Slighty silty SAND, SPu-SPM grey, polimictic with organic matter, lenses of CLAY black, interlayers of gravel SAND (up to 0.20m in thickness), medium dense, saturated	●	▼	8	
1.90	0.20	-9.10		Cobbbles & boulders		▼	15	
2.10	0.20	-9.30		GYTTIJA, Pr: brown, amorphous, compacted		▼	14	
5.85	3.75	-13.05		Slighty silty SAND, SPu-SPM: grey, polimictic with organic matter, lenses of CLAY black	●	▼	9	*m IV*
6.90	1.05	-14.10		Gravelly SAND, SWG: grey with cobbles & pebbles, dense, saturated		▼	12	
7.20	0.30	-14.40		Silty CLAY, CLM-MHC: greenish grey, stiff		▼	22	*lIIpm*
22.80	15.60	-30.00		Sandy CLAY, CLSG: morainic (till), hard with gravel and cobbles, up to 10 %	■ ■ ■	▼ ▼ ▼ ▼	20	*gIImd*

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"Geoprojektas" ®				STUDY FOR THE PORT DEVELOPMENT PROJECT IN THE REPUBLIC OF LITHUANIA
Position	Name	Signature	Date	OBJECT
Director	A. Slauteris		12.03	KLAIPEDA STATE SEA PORT
Chief geologist	N. Kuten			
CLIENT				DRAWING
NIPPON KOEI CONSULTING ENGINEERS				BORE HOLE BS-1 LOG
				Co-ordinates / Stage / Sheet / Total sheets / Scale
Supervisor	N. Iinuma		12.03	LKS '94 / TP / 1 / 30 /

Bore hole BS- 3

X = 6182473.90
Y = 316341.29

Date: 04-06.09.03

Drilling method:
rotary by single tube core barrel ⌀ 108 mm & SPT-TD

Bottom altitude, m = - 7.40

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	7.20	-7.40		Water				
1.70	1.70	-9.10		Slighty silty SAND, SPu-SPM grey, polimictic with organic matter, lenses of CLAY black, interlayers of gravel SAND, medium dense, saturated			8	
1.90	0.20	-9.30		GYTTIJA, Pt: brown, amorphous, compacted			14	
4.40	2.50	-11.80		Slighty silty SAND, SPu-SPM: grey, polimictic with organic matter, lenses of CLAY black	●		9	*m IV*
4.80	0.40	-12.20		Gravelly SAND, SWG: grey with cobbles & pebbles, dense, saturated			12	
9.05	4.25	-16.45		Silty CLAY, CLM-MHC: greenish grey, hard	■		23	*LIIpm*
22.70	13.65	-30.10		Sandy CLAY, CLSG: morainic (till), hard with gravel and cobbles, up to 10 %	■ ■		20	*gIImd*

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"Geoprojektas" ®				STUDY FOR THE PORT DEVELOPMENT PROJECT IN THE REPUBLIC OF LITHUANIA
Position	Name	Signature	Date	OBJECT
Director	A. Slauteris		12.03	KLAIPEDA STATE SEA PORT
Chief geologist	N. Kuten			
CLIENT				DRAWING
NIPPON KOEI CONSULTING ENGINEERS				BORE HOLE BS-3 LOG
Supervisor	N. Iinuma		12.03	

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	3	30	

Bore hole BS- 5

X = 6181264.7
Y = 316845.9

Date: 29-36.09.03

Drilling method:
rotary by single tube core barrel ∅ 108 mm & SPT-TD

Bottom altitude, m = - 1.10

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	1.20	-1.10		Water				
0.90	0.90	-2.00		Slighty silty SAND, SPu-SPM: brown grey, polimictic with plant and shell detritus, rare gravel, very dense, saturated			10	
3.20	2.30	-4.30		Gravelly SAND, SWG: brown with shell detritus, very dense, saturated			13	
5.60	2.40	-6.70		Slighty silty SAND, SPu-SPM: brown grey, polimictic with plant and shell detritus, rare gravel, very dense, saturated Intervale: - 6.70) -7.10 m sandy SILT, MSO: brown black, with organic matter, medium dense, saturated			10	
6.00	0.40	-7.10					4	*m IV*
8.00	2.00	-9.10					10	
8.20	0.20	-9.30		GYTTIJA, Pt: brown, amorphous, compacted			14	
10.90	2.70	-12.00		Slighty silty SAND, SPu-SPM: brown grey, polimictic with plant and shell detritus, rare gravel, very dense, saturated			10	
11.10	0.20	-12.20		Cobbles and boulders			15	
12.30	1.20	-13.40		Sandy CLAY, CLSG: grey, hard with gravel and cobbles, up to 10%			20	*g III gr*
12.90	0.60	-14.00		Very silty SAND, SWM: brown grey with rounded enclosures of sandy CLAY and rare gravel, very dense, saturated			5	
13.10	0.20	-14.20		Intervale: -14.10) -14.20 m sandy CLAY, CLSG: grey, firm with gravel and coobles, up to 10%			19	*l IIpm*
16.00	2.90	-17.10					5	
27.40	11.40	-28.50		Sandy CLAY, CLSG: brown grey, hard with gravel and cobbles, up to 10%			20	
28.90	1.50	-36.00		Sandy CLAY, CLSG: grey, hard with gravel and cobbles, up to 10%			20	*g II md*

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COMPLEX
STUDY FOR THE PORT DEVELOPMENT PROJECT
IN THE REPUBLIC OF LITHUANIA

Position	Name	Signature	Date
Director	A. Slauteris		12.03
Chief geologist	N. Kuten		

OBJECT
KLAIPEDA STATE SEA PORT

CLIENT
NIPPON KOEI
CONSULTING ENGINEERS

DRAWING
BORE HOLE BS-5 LOG

Supervisor	N. Iinuma		12.03

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	5	30	

Bore hole BS- 7

X = 6182071.1
Y = 316889.0

Date: 09-10.10.03

Drilling method:
rotary by single tube core barrel ⌀ 108 mm & SPT-TD

Bottom altitude, m = - 1.60

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	1.91	-1.60		Water				
0.40	0.40	-2.00		Gravelly SAND, SWG: brown grey, very dense, saturated			13	
6.65	6.25	-8.25		Slighty silty SAND, SPu-SPM: from brown grey to light grey with plant, shell detritus, very dense, saturated			10	*m IV*
6.90	0.25	-8.50		Sandy SILT, MSO: brown with organic matter (gyttija), medium dense, saturated			4	
7.70	0.80	-9.30		Slighty silty SAND, SPu-SPM: light grey with plant, shell detritus, very dense, saturated			10	
15.30	7.60	-16.90		Silty CLAY, CLM-MHC: grey, hard with rare gravel, up to 2-3%			23	*l IIpm*
18.40	3.10	-20.00		Sandy CLAY, CLSG: grey, hard with gravel and cobbles, up to 10% Intervale: -19.5 -- 19.7m - cobbles and boulders			20 15 20	*g II md*

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Position	Name	Signature	Date	OBJECT KLAIPEDA STATE SEA PORT				
Director	A. Slauteris		12.03					
Chief geologist	N. Kuten							
CLIENT NIPPON KOEI CONSULTING ENGINEERS				DRAWING BORE HOLE BS-7 LOG				
				Co-ordinates	Stage	Sheet	Total sheets	Scale
Supervisor	N. Iinuma		12.03	LKS '94	TP	7	30	

Bore hole BS- 9

X = 6174376.2
Y = 320465.1

Date: 8-9.12.03

Drilling method:
rotary by single tube core barrel ⌀ 108 mm & SPT-TD

Bottom altitude, m = - 7.30

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	7.40	-7.30		Water				
0.30	0.30	-7.60		Gravelly SAND, SWG: brack, from medium dense to very dense, saturated			2	*m IV*
12.30	12.00	-19.60		Sandy CLAY, CLSG: grey, morainic, hard with gravel & cobbles, up to 5-7 %	● ● ●	▼ ▼ ▼	17	*g III gr*
14.10	1.80	-21.40		Very silty SAND, SWM: grey, uniform, very dense, saturated	●		5	*l IIpm*
15.10	1.00	-22.40		Sandy CLAY, CLSG: grey, stiff			17	
22.00	6.90	-29.30		Slightly silty SAND, SPu-SPM: grey, very dense, saturated	23.0 ● 25.5 ●		10	

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Position	Name	Signature	Date
Director	A. Slauteris		12.03
Chief geologist	N. Kuten		

OBJECT
KLAIPEDA STATE SEA PORT

CLIENT
NIPPON KOEI
CONSULTING ENGINEERS

DRAWING
BORE HOLE BS-9 LOG

Supervisor	N. Iinuma		12.03

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	9	30	

Bore hole BS- 11

X = 6173431.6
Y = 320641.3

Date: 12.12.03

Drilling method:
rotary by single tube core barrel ∅ 108 mm & SPT-TD

Bottom altitude, m = -7.79

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	7.90	-7.79		Water				
6.20	6.20	-13.89		Sandy CLAY, CLSG: grey, morainic, firm with gravel & cobbles, up to 5-7 %. From 0.15 m - hard. 030-0.40 - boulder			19 20	*g II md*

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"Geoprojektas" ®				STUDY FOR THE PORT DEVELOPMENT PROJECT IN THE REPUBLIC OF LITHUANIA
Position	Name	Signature	Date	OBJECT
Director	A. Slauteris		12.03	KLAIPEDA STATE SEA PORT
Chief geologist	N. Kuten			
CLIENT				DRAWING
NIPPON KOEI CONSULTING ENGINEERS				BORE HOLE BS-11 LOG

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	11	30	

Supervisor	N. Iinuma		12.03

Bore hole BS- 15

Date: 24-28.07.03

Drilling method: rotary by single tube core barrel ⌀ 108 mm & SPT-TD

X = 6171881.23
Y = 320214.65
Bottom altitude, m = - 0.95

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	0.95	-0.95		Water				
4.10	4.10	-5.05		Slightly silty SAND, SPu-SPM: brown grey, clayey, polimictic with organic matter (up to -1.65m), plant & shell detritus, up to -1.9m - medium dense, grey, -1.9m - -2.4m - loose, -2.4m - -3.9m - medium dense, than - dense, saturated Intervale: -4.50 - -5.05m - with wood remains and fine, black plant detritus			6 8 7 8 9	
4.75	0.65	-5.70		GYTTIJA, Pt: brown, compacted with plant detritus, saturated. In the lower part with SAND enclosures and lenses			14	
6.15	1.40	-7.10		Slightly silty SAND, SPu-SPM: from black, brown grey to light grey, clayey, polimictic - oligomictic with organic matter, plant & shell detritus, rare gravel, enclosures of GYTTIJA, dense, saturated	●		9	*m IV*
11.40	5.25	-12.35		Slightly silty SAND, SPu-SPM: from black, brown grey to light grey, clayey, polimictic - oligomictic with organic matter, plant & shell detritus, rare gravel, enclosures of GYTTIJA, very dense, saturated Intervale: -11.65 - -12.35m - gravelly SAND, SWG: brown grey, very dense, saturated			10 13	
13.85	2.45	-14.80		Sandy SILT, MS: grey, uniform, hard, compacted with rare interlayers (some cm in thickness) of CLAY, grey, hard			16	*l IIInm*
15.00	1.15	-15.95		Sandy CLAY, CLS: grey - brown grey, homogenous, stiff	■		17	
16.70	1.7	-17.65		Sandy CLAY, CLSG: morainic, grey, firm with gravel and cobbles, 5 - 7 %	■		19	*g IIIgr*
22.55	5.85	-23.50		Very silty SAND, SWM: grey, uniform, very dense, saturated			5	*l IIpm*

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COMPLEX
STUDY FOR THE PORT DEVELOPMENT PROJECT IN THE REPUBLIC OF LITHUANIA

Position	Name	Signature	Date
Director	A. Slauteris		12.03
Chief geologist	N. Kuten		

OBJECT
KLAIPEDA STATE SEA PORT

CLIENT
NIPPON KOEI
CONSULTING ENGINEERS

DRAWING
BORE HOLE BS-15 LOG

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	15	30	

Supervisor	N. Iinuma		12.03

Bore hole BS- 17

X = 6170587.80
Y = 320109.55

Date: 16-19.07.03

Drilling method:
rotary by single tube core barrel ⌀ 108 mm & SPT-TD

Bottom altitude, m = - 5.51

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	5.70	-5.51		Water				
10.90	10.90	-16.41		Slightly silty SAND, SPu-SPM: up to -6.10 m - black, than - grey, clayey, polimictic with organic matter and shell detritus, up to -5.81 m - loose, -6.10 m - medium dense, -6.71 m - dense, than - very dense, saturated. Intervales: -12.0 - 12.2m - with gravels and cobbles -16.41 - 16.61m - fine SAND, grey, clayey with rare gravel, dense, saturated			7 8 9 10	*m IV*
11.10	0.20	-16.61		COBBLES and BOULDERS			15	
11.90	0.80	-17.41		Sandy SILT, MS: greenish grey, hard, uniform, compacted with rare interlayers of CLAY (2 - 3 cm in thickness).			16	
12.30	0.40	-17.81		Sandy CLAY, CLS: grey, hard			18	*l IIInm*
12.70	0.40	-18.21		Sandy SILT, MS: greenish grey, hard, uniform, compacted			16	
13.10	0.40	-18.61		COBBLES and BOULDERS			15	
18.00	4.90	-23.51		Silty CLAY, CLM-MHC: grey, firm with rare gravel, 2 - 3 %			21	*l IIpm*

EXECUTOR				COMPLEX
"Geoprojektas" ®				STUDY FOR THE PORT DEVELOPMENT PROJECT IN THE REPUBLIC OF LITHUANIA
Position	Name	Signature	Date	OBJECT
Director	A. Slauteris		12.03	KLAIPEDA STATE SEA PORT
Chief geologist	N. Kuten			
CLIENT				DRAWING
NIPPON KOEI CONSULTING ENGINEERS				BORE HOLE BS-17 LOG

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	17	30	

Supervisor	N. Iinuma		12.03

Bore hole BS- 19

X = 6171754.10
Y = 319750.70

Date: 14-16.06.03

Drilling method:
rotary by single tube core barrel ⌀ 108 mm & SPT-TD

Bottom altitude, m = - 6.13

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	7.00	-6.13		Water				
4.00	0.68	-10.13		Slightly silty SAND, SPu-SPM: from black, brown grey to light grey, clayey, polimictic - oligomictic with organic matter, plant & shell detritus, rare gravel, enclosures of GYTTIJA, loose-dense, saturated	●	▼	7 8 9	m IV
4.60	0.60	-10.73		GYTTIJA, Pt: brown, compacted with plant detritus, saturated. In the lower part - with fine SAND enclosures and lenses			14	
5.10	0.50	-11.23		Slightly silty SAND, brown grey with plant remains & enclosures of gyttija, medium dense, saturated			8	
13.00	7.90	-19.13		Sandy SILT, MS: greenish grey, hard, uniform, compacted with rare interlayers (some cm in thickness) of CLAY, grey, hard		▼	16	l III nm
13.30	0.30	-19.43		Sandy CLAY,CLS: grey, hard, homogenous		▼	18	
13.70	0.40	-19.83		Sandy SILT, MS: greenish grey, hard, uniform			16	
14.00	0.30	-20.13		Sandy CLAY,CLS: grey, hard, homogenous		▼	18	
14.20	0.20	-20.33		Sandy SILT, MS: greenish grey, hard, uniform			16	
14.50	0.30	-20.63		Sandy CLAY,CLS: grey, hard, homogenous			18	
14.90	0.40	-21.03		Sandy CLAY, CLSG: morainic, grey, hard with gravel & cobbles, 5 - 7 %		▼	20	gIIIgr
16.87	1.97	-23.00		Silty CLAY,CIM: grey brown, firm with rare gravel, 2 - 3 %		▼	21	l IIpm

EXECUTOR				COMPLEX
"Geoprojektas" ®				STUDY FOR THE PORT DEVELOPMENT PROJECT IN THE REPUBLIC OF LITHUANIA
Position	Name	Signature	Date	OBJECT
Director	A. Slauteris		12.03	KLAIPEDA STATE SEA PORT
Chief geologist	N. Kuten			
CLIENT				DRAWING
NIPPON KOEI CONSULTING ENGINEERS				BORE HOLE BS-19 LOG
Supervisor	N. Iinuma		12.03	Co-ordinates: LKS '94 / Stage: TP / Sheet: 19 / Total sheets: 30 / Scale:

Bore hole BS- 20

X = 6172364.70
Y = 319628.70

Date: 13-14.06.03

Drilling method:
rotary by single tube core barrel ⌀ 108 mm & SPT-TD

Bottom altitude, m = - 8.15

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	9.40	-8.15		Water				
2.40	2.40	-10.55		Slightly silty SAND, SPu: up to 9.6m - black with organic matter, loose, than - grey, clayely, polimictic with shell detritus, medium dense, saturated			7 8	m IV
2.80	0.40	-10.95		GYTTIJA, Pt: brown, compacted with plant detritus, saturated.			14	
3.70	0.90	-11.85		Slightly silty SAND, SPu: brown grey with plant remains & enclosures of gyttija, dense, saturated			9	
10.05	6.30	-18.15		Sandy SILT, MS: greenish grey, hard, uniform, compacted, with rare interlayers (some cm in thickness) of CLAY grey, hard			16	l III nm
10.45	0.40	-18.55		Sandy CLAY, CLS: grey, hard, homogenous			18	
11.80	1.35	-19.90		Sandy SILT, MS: greenish grey, hard, uniform			16	
12.25	0.45	-20.35		Sandy CLAY, CLS: grey, hard, homogenous			18	
13.90	1.65	-22.00		Sandy SILT, MS: greenish grey, hard, uniform			16	
14.25	0.35	-22.35		Cobbles & boulders, hard, saturated			15	
15.35	1.10	-23.45		Sandy CLAY, CLM-MHC: morainic, grey, hard with gravel & cobbles, 5 - 7 %			20	gIIIgr

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COMPLEX
STUDY FOR THE PORT DEVELOPMENT PROJECT IN THE REPUBLIC OF LITHUANIA

Position	Name	Signature	Date
Director	A. Slauteris		12.03
Chief geologist	N. Kuten		

OBJECT
KLAIPEDA STATE SEA PORT

CLIENT
NIPPON KOEI
CONSULTING ENGINEERS

DRAWING
BORE HOLE BS-20 LOG

				Co-ordinates	Stage	Sheet	Total sheets	Scale
Supervisor	N. Iinuma		12.03	LKS '94	TP	20	30	

Bore hole BS- 18

X = 6171182.25
Y = 319936.90

Date: 21-23.06.03

Drilling method:
rotary by single tube core barrel ⌀ 108 mm & SPT-TD

Bottom altitude, m = - 4.52

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—		-4.52		Water				
				Slightly silty SAND, SPu-SPM: up to -5.50m - black, very loose, than - grey, clayey, polimictic with organic matter and shell detritus, up to -7.50 m - medium dense, -9.40 m - dense, than - very dense, saturated.			6, 7, 8, 9, 10	m IV
6.00	6.00	-10.52		GYTTIJA, Pt: brown, compacted with plant detritus, saturated. In the lower part - with fine SAND enclosures and lenses			14	
6.25	0.25	-10.77						
6.60	0.35	-11.12		Slightly silty SAND, SPu-SPM: medium dense, saturated			8	
				Sandy SILT, MS: greenish grey, hard, uniform. Interlayer of sandy CLAY, CLS: hard, from -17.52 m to -17.82 m.			16, 18, 16	l III nm
14.60	8.00	-19.12		Sandy CLAY, CLS: grey, hard, homogenous			18	
14.90	0.30	-19.42						
15.10	0.20	-19.62		Sandy SILT, MS: greenish grey, hard, uniform			16	
18.70	3.60	-23.22		Silty CLAY, CLM-MHC: grey, firm with rare gravel, 2 - 3 %			21	l IIpm

EXECUTOR				COMPLEX
"Geoprojektas" ®				STUDY FOR THE PORT DEVELOPMENT PROJECT IN THE REPUBLIC OF LITHUANIA
Position	Name	Signature	Date	OBJECT
Director	A. Slauteris		12.03	KLAIPEDA STATE SEA PORT
Chief geologist	N. Kuten			
CLIENT				DRAWING
NIPPON KOEI CONSULTING ENGINEERS				BORE HOLE BS-18 LOG
				Co-ordinates: LKS '94 / Stage: TP / Sheet: 18 / Total sheets: 30 / Scale:
Supervisor	N. Iinuma		12.03	

Bore hole BS- 16

X = 6172488.36
Y = 320076.50

Date: 30-31.07.03

Drilling method:rotary by single tube core barrel ⌀ 108 mm & SPT-TD

Bottom altitude, m = - 1.64

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	1.70	-1.64		Water				
0.34	0.34	-2.04		Slightly silty SAND, SPu-SPM: brown grey, clayey with plant detritus, medium dense.			8	
7.90	0.76	-9.54		Slightly silty SAND, SPu-SPM: dark grey, from -5.35m - greenish grey, clayey, polimictic with plant & shell detritus, -2.04 - 2.25m - loose, -2.25 - 2.55m - medium dense, - 2.55 - 5.55m - loose, - 5.55 - 8.25m - medium dense, than - dense, saturated	●		7 8 7 8 9	m IV
9.45	1.39	-11.09		Gravelly SAND, SWG: grey, polimictic with rare gravel, dense, from -9.70m - very dense, saturated			10	
10.65	1.20	-12.29		Sandy SILT, MS: grey, uniform, hard			16	
12.25	1.60	-13.89		Sandy CLAY, CLS: brown, firm			17	l IIInm
14.85	2.60	-16.49		Sandy SILT, MS: grey, uniform, hard			16	
15.55	0.70	-17.19		Sandy CLAY, CLSG: grey, morainic, firm with gravel and cobbles, 5 - 7 %			19	
17.45	0.90	-19.09		Sandy CLAY, CLSG: grey, morainic, hard with gravel and cobbles, 5-7 %	■		20	g IIIgr
17.95	0.50	-19.59		Gravelly SAND, SWG: brown grey, very dense, saturated			13	
18.75	0.80	-20.39		COBBLES & BOULDERS, very dense, saturated			15	
20.25	1.50	-21.89		Sandy CLAY, CLSG: grey, morainic, hard with gravel and cobbles, 5 - 7 %	■		20	gIImd
20.55	0.30	-22.19		COBBLES & BOULDERS			15	
21.75	1.20	-23.39		Sandy CLAY, CLSG: morainic, grey, hard with gravel and cobbles, up to 10 %			20	

EXECUTOR

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Position	Name	Signature	Date
Director	A. Slauteris		12.03
Chief geologist	N. Kuten		

COMPLEX

STUDY FOR THE PORT DEVELOPMENT PROJECT IN THE REPUBLIC OF LITHUANIA

OBJECT

KLAIPEDA STATE SEA PORT

CLIENT

NIPPON KOEI
CONSULTING ENGINEERS

DRAWING

BORE HOLE BS-16 LOG

Supervisor	N. Iinuma		12.03

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	16	30	

Bore hole BS- 14

Date: 14-16.07.03

Drilling method: rotary by single tube core barrel ⌀ 108 mm & SPT-TD

X = 6171314.50
Y = 320393.10
Bottom altitude, m = - 1.22

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	1.45	-1.22		Water				
0.50	0.50	-1.72		Slightly silty SAND, SPu-SPM: grey, clayey, polimictic with organic matter, plant & shell detritus, rare gravel, enclosures of GYTTIJA, very loose , saturated			6	
2.80	2.30	-4.02		Slightly silty SAND, SPu-SPM: grey, clayey, polimictic with plant & shell detritus, up to -3.25 m loose, than - medium dense, saturated			7 8	
12.90	10.10	-14.12		Slightly silty SAND, SPu-SPM: light grey, clayey polimictic-oligomictic with plant, shell denritus, up to - 5.02 m dense, than - very dense, saturated			9 10	m IV
14.80	1.90	-16.02		Sandy SILT, MS: grey, hard.			16	l IIInm
16.80	2.00	-18.02		Sandy CLAY, CLSG: morainic, grey, firm with gravel and cobbles, 5 - 7 %			19	g IIIgr
21.10	4.30	-22.32		Silty CLAY, CLS-MHC: grey brown, firm with rare gravel, 2 - 3 %	■		21	l IIpm
21.30	0.20	-22.52		Very silty SAND, SWM: grey, uniform, very dense, saturated			5	
21.80	0.50	-23.02		Silty CLAY, CLS-MHC: grey brown, firm with rare gravel, 2 - 3 %			21	

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Position	Name	Signature	Date
Director	A. Slauteris		12.03
Chief geologist	N. Kuten		

OBJECT
KLAIPEDA STATE SEA PORT

CLIENT
NIPPON KOEI
CONSULTING ENGINEERS

DRAWING
BORE HOLE BS-14 LOG

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	14	30	

Supervisor	N. Iinuma		12.03

Bore hole BS- 12

X = 6173334.5
Y = 320667.1

Date: 12.12.03

Drilling method:
rotary by single tube core barrel ∅ 108 mm & SPT-TD

Bottom altitude, m = -6.99

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
				Water				
-	7.10	-6.99						
0.20	0.20	-7.19		Gravelly SAND, SWG: brown grey, medium dense, saturated			11	*IIV*
0.60	0.40	-7.59		Very silty SAND, SWM: grey, uniform, very dense, saturated			5	*lIIpm*
1.10	0.50	-8.09		Sandy CLAY, CLSG: grey, morainic, firm with gravel & cobbles, up to 5-7 %. From 0.01 m - hard.			19, 20	*gIImd*
6.01	4.91	-13.00		Silty CLAY, CLM-MHC: grey brown, hard with rare gravel, up to 2-3 %			23	*lIIpm*

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Position	Name	Signature	Date	OBJECT
Director	A. Slauteris		12.03	KLAIPEDA STATE SEA PORT
Chief geologist	N. Kuten			
CLIENT				DRAWING
NIPPON KOEI CONSULTING ENGINEERS				BORE HOLE BS-12 LOG
				Co-ordinates / Stage / Sheet / Total sheets / Scale
Supervisor	N. Iinuma		12.03	LKS '94 / TP / 12 / 30 /

Bore hole BS- 10

X = 6173851.3
Y = 320599.6

Date: 11-12.12.03

Drilling method:
rotary by single tube core barrel ⌀ 108 mm & SPT-TD

Bottom altitude, m = - 7.58

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	7.50	-7.58		Water				
0.30	0.36	-7.88		Clayey SILT, MCO: dark brown - black with organic matter and gravel, very soft			2	*m IV*
8.52	8.22	-16.10		Sandy CLAY, CLS: grey, stiff, with gravel and cobbles, up to 5-7 %			17	*g III gr*
14.62	6.10	-22.20		Very silty SAND, SWM: grey, uniform, very dense, saturated			5	*l IIpm*
22.00	7.38	-29.58		Slightly silty SAND, SPu-SPM: grey, very dense, saturated	23.0 25.5	23.0 25.5	10	

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Position	Name	Signature	Date	OBJECT
Director	A. Slauteris		12.03	KLAIPEDA STATE SEA PORT
Chief geologist	N. Kuten			
CLIENT				DRAWING
NIPPON KOEI CONSULTING ENGINEERS				BORE HOLE BS-10 LOG

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	10	30	

Supervisor	N. Iinuma		12.03

Bore hole BS- 8

X = 6182615.6
Y = 316857.9

Date: 12.10.03

Drilling method:
rotary by single tube core barrel ⌀ 108 mm & SPT-TD

Bottom altitude, m = - 1.80

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	2.31	-1.80		Water				
1.20	1.20	-3.00		Gravelly SAND, SWG: brown grey, polimictic, very dense, saturated			13	
6.00	4.80	-7.80		Slighty silty SAND, SPu-SPM: from brown grey to light grey with plant, shell detritus, up to - 5.00 m - dense, than - very dense, saturated			9 10	*m IV*
6.60	0.60	-8.40		Sandy SILT, MSO: brown with organic matter, medium dense, saturated			4	
7.65	1.05	-9.45		Slighty silty SAND, SPu-SPM: light grey with plant, shell detritus, very dense, saturated			10	
13.00	5.35	-14.80		Silty CLAY, CLM-MHC: grey, hard with some streaks of silty SAND, rare gravel, up to 2-3%			23	*l IIpm*
28.20	15.20	-30.00		Sandy CLAY, CLSG: grey, hard with gravel and cobbles, up to 10%			20	*g II md*

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STUDY FOR THE PORT DEVELOPMENT PROJECT
IN THE REPUBLIC OF LITHUANIA

Position	Name	Signature	Date
Director	A. Slauteris		12.03
Chief geologist	N. Kuten		

OBJECT
KLAIPEDA STATE SEA PORT

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CONSULTING ENGINEERS

DRAWING
BORE HOLE BS-8 LOG

Supervisor	N. Iinuma		12.03

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	8	30	

Bore hole BS- 6

X = 6181647.5
Y = 316908.7

Date: 06-07.10.03

Drilling method:
rotary by single tube core barrel ⌀ 108 mm & SPT-TD

Bottom altitude, m = - 1.70

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	1.94	-1.70		Water				
0.30	0.30	-2.00		Gravelly SAND, SWG: brown, very dense, saturated			13	
6.70	6.40	-8.40		Slighty silty SAND, SPu-SPM: from brown grey to light grey with plant, shell detritus, up to -5.80 m - dense, than - very dense, saturated			9 10	*m IV*
7.10	0.40	-8.80		Sandy SILT, MSO: brown with plant remains, organic matter (gyttija), medium dense, saturated			4	
8.70	1.60	-10.40		Slighty silty SAND, SPu-SPM: light grey with plant, shell detritus, and rare gravel, up to -9.50 m - dense, than - very dense, saturated			9 10	
8.95	0.25	-10.65		Cobbles and boulders			15	
14.35	5.40	-16.05		Silty CLAY, CLM-MHC: grey, hard with rare gravel, up to 2-3%			23	*l IIpm*
18.30	3.95	-20.00		Sandy CLAY, CLSG: grey, hard with gravel and cobbles, up to 10%			20	*g II md*

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Position	Name	Signature	Date
Director	A. Slauteris		12.03
Chief geologist	N. Kuten		

CLIENT
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Supervisor	N. Iinuma		12.03

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STUDY FOR THE PORT DEVELOPMENT PROJECT
IN THE REPUBLIC OF LITHUANIA

OBJECT
KLAIPEDA STATE SEA PORT

DRAWING
BORE HOLE BS-6 LOG

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	6	30	

Bore hole BS- 4

X = 6182973.16
Y = 316335.12

Date: 17-19.09.03

Drilling method:
rotary by single tube core barrel ∅ 108 mm & SPT-TD

Bottom altitude, m = - 7.60

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	7.50	-7.60		Water				
1.40	1.40	-9.00		Slighty silty SAND, SPu-SPM grey, polimictic with organic matter, lenses of CLAY black, interlayers of gravel SAND, medium dense, saturated			9	
1.60	0.20	-9.20		GYTTIJA, Pt: brown, amorphous, compacted			14	
3.90	2.30	-11.50		Slighty silty SAND, SPu-SPM: grey, polimictic with organic matter, lenses of CLAY black	●		9	*m IV*
4.10	0.20	-11.70		Gravelly SAND, SWG: grey with cobbles & pebbles, dense, saturated			12	
7.60	3.50	-15.20		Silty CLAY, CLM-MHC: greenish grey, hard	■		22	*LIIpm*
22.40	14.80	-30.00		Sandy CLAY, CLSG: morainic (till), hard with gravel and cobbles, up to 10 %	■ ■		20	*gIImd*

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Position	Name	Signature	Date	OBJECT
Director	A. Slauteris		12.03	KLAIPEDA STATE SEA PORT
Chief geologist	N. Kuten			
CLIENT				DRAWING
NIPPON KOEI CONSULTING ENGINEERS				BORE HOLE BS-4 LOG

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	4	30	

Supervisor	N. Iinuma		12.03

Bore hole BS- 2

X = 6181976.53
Y = 316347.05

Date: 30.07.03

Drilling method:
rotary by single tube core barrel ⌀ 108 mm & SPT-TD

Bottom altitude, m = - 7.11

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—	7.30	-7.11		Water				
2.00	2.00	-9.11		Slighty silty SAND, SPu-SPM grey, polimictic with organic matter, lenses of CLAY black, interlayers of gravel SAND (up to 0.20m in thickness), medium dense, saturated			8	
2.30	0.30	-9.41		GYTTIJA, Pt: brown, amorphous, compacted			14	
5.60	3.30	-12.71		Slighty silty SAND, SPu-SPM: grey, polimictic with organic matter, lenses of CLAY black	●		9	*m IV*
6.20	0.60	-13.31		Gravelly SAND, SWG: grey with cobbles & pebbles, dense, saturated			12	
12.20	6.00	-19.31		Silty CLAY, CLM-MHC: greenish grey, hard	■		23	*LIIpm*
22.89	10.69	-30.00		Sandy CLAY, CLSG: morainic (till), hard with gravel and cobbles, up to 10 %	■ ■		20	*gIImd*

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STUDY FOR THE PORT DEVELOPMENT PROJECT
IN THE REPUBLIC OF LITHUANIA

Position	Name	Signature	Date
Director	A. Slauteris		12.03
Chief geologist	N. Kuten		

OBJECT
KLAIPEDA STATE SEA PORT

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CONSULTING ENGINEERS

DRAWING
BORE HOLE BS-2 LOG

Supervisor	N. Iinuma		12.03

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	2	30	1:100

Bore hole BS- 13

X = 6170718.27
Y = 320561.75

Date: 21-22.07.03

Drilling method: rotary by single tube core barrel Ø 108 mm & SPT-TD

Bottom altitude, m = - 1.97

Depth from sea bottom, m	Layer thickness, m	Layer bottom in m BSL	Lithologic log	Soil classification according to BS 5930: 1981	Samples	SPT test	Soil layer number	Geologic index
—		-1.97		Water				
0.73	0.73	-2.70		Clayey SILT, MCO: dark brown with organic matter, very soft			2	
1.60	0.87	-3.57		Slightly silty SAND, SPu-SPM: brown grey, clayey, polimictic with plant & shell detritus, loose, saturated			7	
14.90	13.30	-16.87		Slightly silty SAND, SPu-SPM: light grey, clayey, oligomictic with plant, shell detritus, up to -5.60 m-medium dense, -5.60 - -6.20m - dense, than - very dense, saturated	●		8 9 10	*m IV*
15.20	0.30	-17.17		Sandy SILT, MS: grey, hard			16	*l IIInm*
18.60	3.40	-20.57		Sandy CLAY, CLS: morainic, grey, firm with gravel and cobbles, 5 - 7 % Intervale: -19.53 - -19.63m - boulders			19	*g IIIgr*
21.20	2.60	-23.17		Silty CLAY, CLM-MHC: grey brown, firm with rare gravel, 2 - 3 %	■		21	*l IIpm*

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STUDY FOR THE PORT DEVELOPMENT PROJECT
IN THE REPUBLIC OF LITHUANIA

Position	Name	Signature	Date
Director	A. Slauteris		12.03
Chief geologist	N. Kuten		

OBJECT

KLAIPEDA STATE SEA PORT

CLIENT

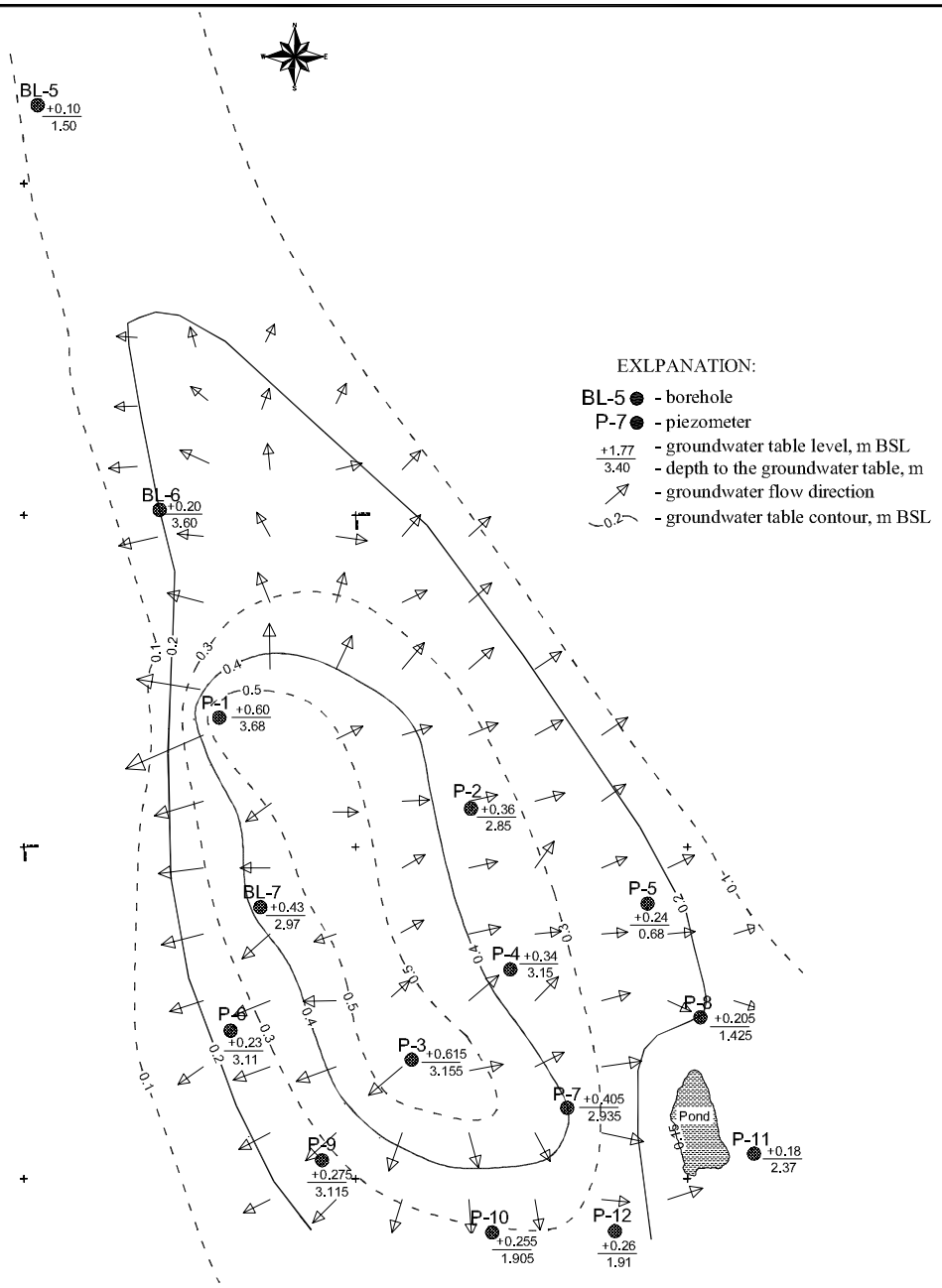
NIPPON KOEI
CONSULTING ENGINEERS

DRAWING

BORE HOLE BS-13 LOG

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	13	30	

Supervisor	N. Iinuma		12.03



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"Geoprojektas" ®				STUDY FOR THE PORT DEVELOPMENT PROJECT IN THE REPUBLIC OF LITHUANIA
Position	Name	Signature	Date	OBJECT
Director	A. Slauteris		2003. 06	KLAIPEDA STATE SEA PORT
Chief geologist	N. Kutenis			
CLIENT				DRAWING
NIPPON KOEI CONSULTING ENGINEERS				MAP OF GROUNDWATER SURFACE TABLE ON THE AREA B
Supervisor	N. Iinuma		2003.06	

Co-ordinates	Stage	Sheet	Total sheets	Scale
LKS '94	TP	1	1	1/10000

MEAN SOIL PHYSICAL AND MECHANICAL PROPERTIES OF THE LAYERS

Layer No.	Soil symbol	Relative density/ Shear strength	Physical properties							Mechanical properties					
			Water content	Liquid limit	Density			Porosity	Voids ratio	3 – axial data UU			SPT data		
			W	W_L^C	specific, ρ_s	bulk, ρ	dry bulk, ρ_d	n	e	undrained shear strength, Cu	Angle of internal friction, φ	Cohesion, c	Penetration resistance, N_{30}	Density index, I_D	Angle of internal friction, φ
			%		g/cm³			%	part unit	kPa	degree	kPa	blows	%	degree
3	MSO	Loose											7	30	29
4	MSO	Medium dense											15	38	32
7	SPu-SPM	Loose											7	30	29
8	SPu-SPM	Medium dense											21	53	33
9	SPu-SPM	Dense											40	70	38
10	SPu-SPM	Very dense											>50	>80	>44
11	SWG	Medium dense											26	65	34
12	SWG	Dense											42	74	39
13	SWG	Very dense											>50	>80	>44
14	Pt	Compacted	318		1.58								31		
16	MS	Hard	16.0		2.65	2.16	1.86	18.7	0.23				73		
17	CLS	Stiff	16.6	23.3	2.71	2.18	1.87	31.5	0.46	53	21	28	15		
18	CLS	Hard											24		
19	CLSG	Firm	16.2	24.7	2.71	2.20	1.90	30.2	0.44	65	21	32	14		
20	CLSG	Hard	10.8	22.7	2.67	2.28	2.03	23.0	0.30	570	33	256	79		
21	CLM÷MHC	Firm	24.3	49.3	2.71	2.02	1.62	40.2	0.68	71	22	35	12		
22	CLM÷MHC	Stiff	21.2	36.8	2.72	2.09	1.73	36.3	0.59	110	21	55	27		
23	CLM÷MHC	Hard	20.5	34.6	2.70	2.06	1.75	36.0	0.59	359	25	168	39		

Result of Grain Size Analysis

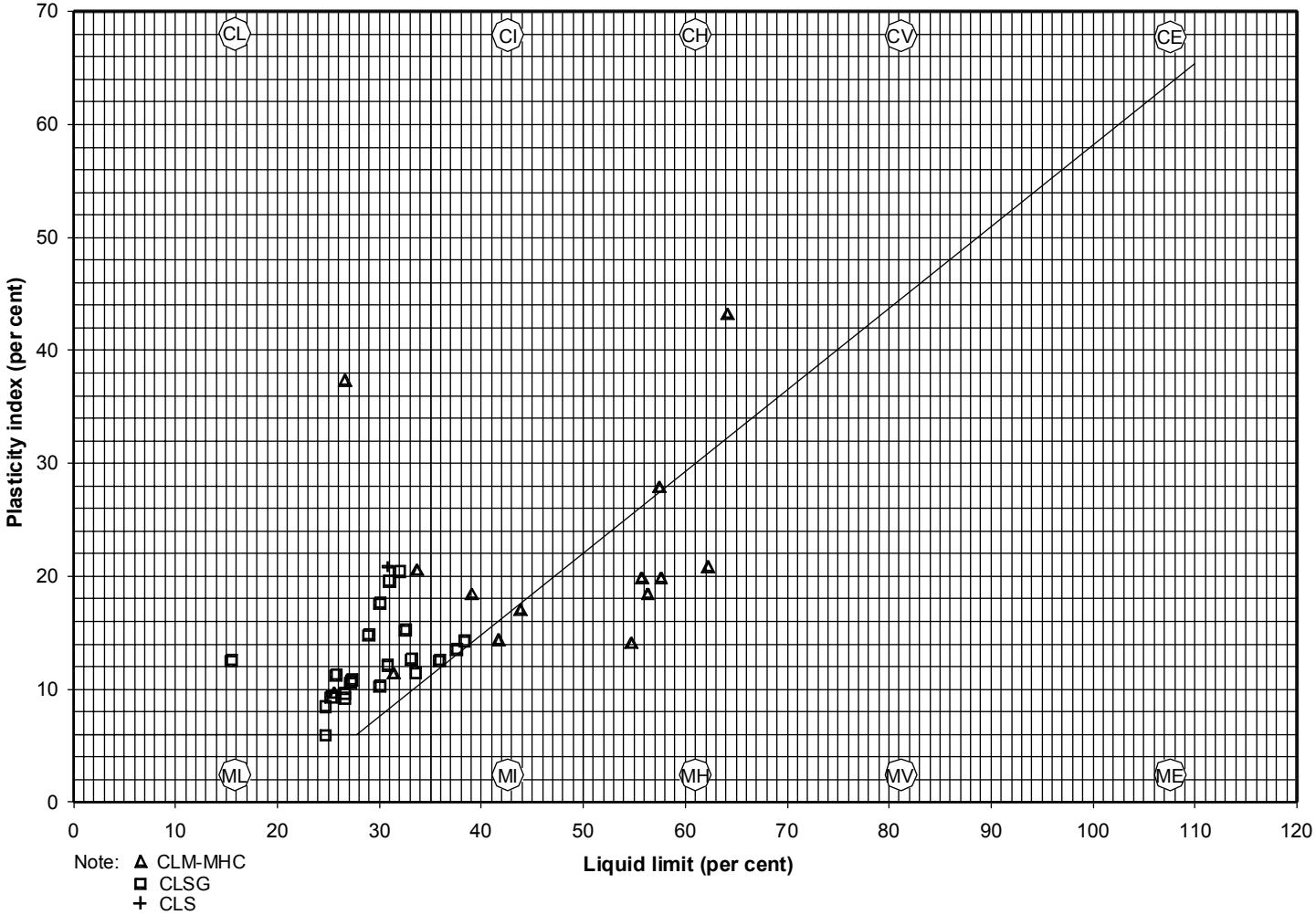
Bore Hole No.	Depth BSL (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Specific Gravity (mg/m3)	Layer No.
(1) Outer Port Area							
BL-3	-8,1	3	97	10	0	2.64	4
BL-4	-8,2	3	28	56	13	2.66	4
BL-2	-0,2	22	78	7	0	2.65	8
BS-1	-12,4	0.6	94.8	4.8	0	2.65	9
BS-2	-10,2	0.6	94.6	4.8	0	2.64	9
BS-3	-11,0	0.6	94.6	4.8	0	2.64	9
BS-4	-9,5	0.7	95.9	3.8	0	2.65	9
BL-4	-5,0	0	100	5	0	2.67	9
BL-1	-5,5	0	100	0	0	2.63	10
BL-2	-4,2	0	99	5	0	2.65	10
BL-2	-8,6	3	41	45	11	2.68	10
BL-3	-3,7	0	99	4	0	2.66	10
(2) Inner Port Area							
BS-13	-9,9	0	99	2	0	2.62	10
BS-14	-8,6	0	100	1	0	2.64	10
BS-15	-6,7	0.6	94.6	4.8	0	2.64	9
BS-16	-6,5	0.6	94.6	4.5	0	2.65	8
BS-17	-9,4	1	99	4	0	2.6	10
BS-17	-13,2	0	100	2	0	2.65	10
BS-18	-7,8	2	98	2	0	2.63	9
BS-19	-8,6	0	98.6	1.4	0	2.61	8
BS-20	-9,4	2	98	3	0	2.63	8
BL-5	-0,9	0	100	1	0	2.65	7
BL-5	-4,6	0	99	3	0	2.66	8
BL-5	-6,6	0	100	1	0	2.64	9
BL-5	-9,8	6	93	5	0	2.63	13
BL-5	-11,9	6	40	44	10	2.69	16
BL-5	-12,9	2	28	58	12	2.71	17
BL-5	-13,8	5	31	50	13	2.72	16
BL-5	-16,3	5	31	51	13	2.71	16
BL-5	-17,7	3	40	48	10	2.67	20
BL-6	-2,5	0	101	0	0	2.65	8
BL-6	-6,8	0	100	1	0	2.61	10
BL-6	-13,0	1	99	3	0	2.64	8
BL-7	-1,75	0	100	3	0	2.61	8
BL-7	-4,9	0	100	4	0	2.63	10
BL-7	-9,8	1	99	4	0	2.65	10
BL-7	-12,6	1	32	61	6	2.67	16
BL-7	-15,0	3	30	55	12	2.73	19
BL-8	-1,0	1	100	4	0	2.63	7
BL-8	-3,15	0	56	44	0	2.65	3
BL-8	-6,4	0	99	3	0	2.63	8
BL-8	-9,2	7	92	4	0	2.66	13
BL-8	-10,3	13	87	3	0	2.66	13
BL-8	-11,7	1	58	39	2	2.67	16
BL-8	-14,5	8	34	48	11	2.72	19
BL-8	-17,6	2	73	23	2	2.65	5
BL-9	-0,9	0	100	4	0	2.63	1
BL-9	-1,5	1	99	4	0	2.63	7
BL-9	-3,6	1	90	9	0	2.6	3
BL-9	-5,9	0	100	4	0	2.65	7
BL-9	-8,2	0	60	40	0	2.65	3
BL-9	-9,6	0	55	45	0	2.62	3
BL-9	-11,6	19	63	17	1	2.69	13
BL-9	-14,9	5	35	51	9	2.67	19
BL-10	-1,7	2	98	4	0	2.63	3
BL-10	-5,6	0	100	5	0	2.64	7
BL-10	-7,9	5	95	5	0	2.65	3
BL-10	-9,9	0	65	35	0	2.62	3
BL-10	-15,3	17	41	37	5	2.72	19

PHYSICAL STATE PROPERTIES OF TESTED SPECIMENS

No.	BH.No.	Sampling altitude, m BSL	Layer No.	Soil symbol	Density of solid particles	Density of undistur-bed soil	Dry density of soil	Unit weight	Moisture content	Liquid limit of Casagrade	Plastic limit	Plasticity index of Casagran-de	Consis-tency index	Voids ratio	Porosity	Degree of saturation
					ρ_s g/cm^3	ρ_n g/cm^3	ρ_d g/cm^3	γ kN/m^3	w_n %	w_L [c] %	w_p %	I_p [c] %	I_c part unit	e part unit	n %	Sr part unit
1	BL-1	12.93	23	CLM	2.73	2.24	2.03	21.94	11.60	31.39	13.60	11.42	1.25	0.36	26.5	0.97
2	BL-1	17.75	20	CLSG	2.65	2.22	1.97	21.78	13.00	33.13	13.90	12.69	1.10	0.35	25.9	0.99
3	BL-2	17.38	23	CIM	2.70	1.95	1.67	19.14	24.00	39.08	13.90	18.47	0.23	0.72	41.9	0.91
4	BL-2	11.03	23	MIC	2.68	2.04	1.70	20.03	19.80	43.86	18.20	17.06	0.87	0.58	36.7	0.92
5	BL-3	12.75	23	MHC	2.71	1.91	1.53	18.72	25.00	57.64	25.70	19.88	1.05	0.77	43.6	0.98
6	BL-3	17.45	20	CLSG	2.69	2.31	1.82	22.63	10.00	27.19	11.30	10.58	1.17	0.28	21.9	0.95
7	BL-4	13.43	22	MHC	2.73	2.00	1.58	19.62	27.00	57.49	19.90	27.92	1.99	0.73	42.2	1.00
8	BL-4	11.00	22	CLM	2.72	2.28	2.02	22.37	12.70	33.71	8.70	20.59	0.73	0.36	26.5	0.97
9	BL-4	18.18	20	CLSG	2.68	2.19	1.94	21.51	13.00	37.63	16.40	13.54	1.35	0.38	27.5	0.91
10	BL-5	17.58	20	CLSG	2.67	2.24	2.06	21.97	9.00	25.74	9.80	11.28	1.10	0.30	23.1	0.90
11	BL-6	11.60	20	CLSG	2.70	2.22	1.95	21.82	14.00	32.55	11.70	15.23	0.79	0.38	27.5	0.98
12	BL-6	14.70	20	CLSG	2.69	2.27	2.02	22.27	12.30	28.93	9.50	14.81	0.73	0.34	25.4	0.98
13	BL-7	14.88	20	CLSG	2.69	2.04	1.63	20.04	25.00	38.35	16.40	14.24	0.15	0.65	39.4	1.04
14	BS-1	28.50	20	CLSG	2.63	2.31	2.10	22.66	9.80	27.33	11.20	10.86	1.18	0.25	20.0	1.03
15	BS-1	17.35	20	CLSG	2.71	2.24	1.97	21.97	13.70	35.89	15.90	12.55	1.25	0.38	27.5	0.99
16	BS-1	22.25	20	CLSG	2.70	2.34	2.05	22.96	10.00	30.81	12.70	12.13	1.31	0.28	21.9	1.00
17	BS-2	28.15	20	CLSG	2.65	2.31	2.12	22.66	8.90	25.30	10.90	9.31	1.30	0.25	20.0	0.95
18	BS-2	20.45	20	CLSG	2.66	2.27	2.05	22.27	10.50	30.09	13.50	10.29	1.41	0.30	23.1	0.95
19	BS-2	14.25	21	CLM	2.69	2.26	2.05	22.21	10.50	25.59	10.80	9.73	1.04	0.31	23.7	0.91
20	BS-3	26.15	20	CLSG	2.70	2.27	2.02	22.27	12.50	15.50	15.50	12.55	1.34	0.34	25.4	1.00
21	BS-3	19.05	20	CLSG	2.67	2.33	2.08	22.86	12.00	24.72	12.90	5.92	1.21	0.28	22.1	1.13
22	BS-3	14.35	21	CHM	2.67	1.97	1.59	19.30	27.00	54.74	27.80	14.10	1.08	0.72	41.9	1.00
23	BS-4	26.50	20	CLSG	2.67	2.28	2.07	22.37	9.90	26.61	11.60	9.59	1.25	0.29	22.3	0.92
24	BS-4	17.95	20	CLSG	2.65	2.29	2.09	22.46	9.60	24.72	11.10	8.46	1.25	0.27	21.3	0.95
25	BS-4	13.50	21	CIM	2.68	1.98	1.60	19.46	24.00	41.69	18.60	14.38	0.47	0.68	40.5	0.95
26	BS-13	18.45	20	CLSG	2.74	2.20	1.89	21.58	10.50	31.97	7.60	20.45	0.80	0.45	31.2	1.00
27	BS-13	20.75	21	CLM	2.83	2.00	1.53	19.62	31.00	26.61	14.70	37.37	0.38	0.88	46.8	1.00
28	BS-14	19.50	21	MHC	2.66	1.98	1.63	19.42	21.60	62.28	28.20	20.87	1.45	0.63	38.7	0.91
29	BS-15	16.35	20	CLSG	2.72	2.21	1.92	21.68	14.90	30.09	8.30	17.63	0.47	0.43	29.9	0.95
30	BS-15	15.70	17	CLS	2.71	2.18	1.87	21.39	16.60	30.81	6.50	20.87	0.32	0.46	31.5	0.98
31	BS-16	21.20	20	CLSG	2.65	2.31	2.12	22.66	8.80	26.61	11.90	9.17	1.48	0.25	20.0	0.94
32	BS-16	18.20	20	CLSG	2.72	2.24	1.96	21.97	14.20	30.96	7.50	19.60	0.52	0.39	28.1	0.99
33	BS-17	22.25	21	MHC	2.68	2.00	1.59	19.62	26.00	64.16	13.60	43.29	0.60	0.69	40.8	1.01
34	BS-18	10.60	14	Pt	1.58				318.0							
35	BS-18	21.50	21	MHC	2.70	2.01	1.62	19.72	23.80	56.33	25.80	18.47	1.15	0.66	39.8	0.97
36	BS-19	22.05	21	MHC	2.69	2.09	1.75	20.50	19.20	55.75	24.40	19.88	1.37	0.53	34.6	0.97
37	BS-20	15.50	16	MS	2.65	2.16	1.86	18.25	16.00					0.23	18.7	
38	BS-20	22.60	20	CLSG	2.70	2.28	2.04	22.34	11.50	33.57	15.10	11.42	1.44	0.32	24.2	0.97

Plasticity chart for the classification of fine soils	KLAIPEDA PORT DEVELOPMENT PROJECT

ANNEX 6.1.2.

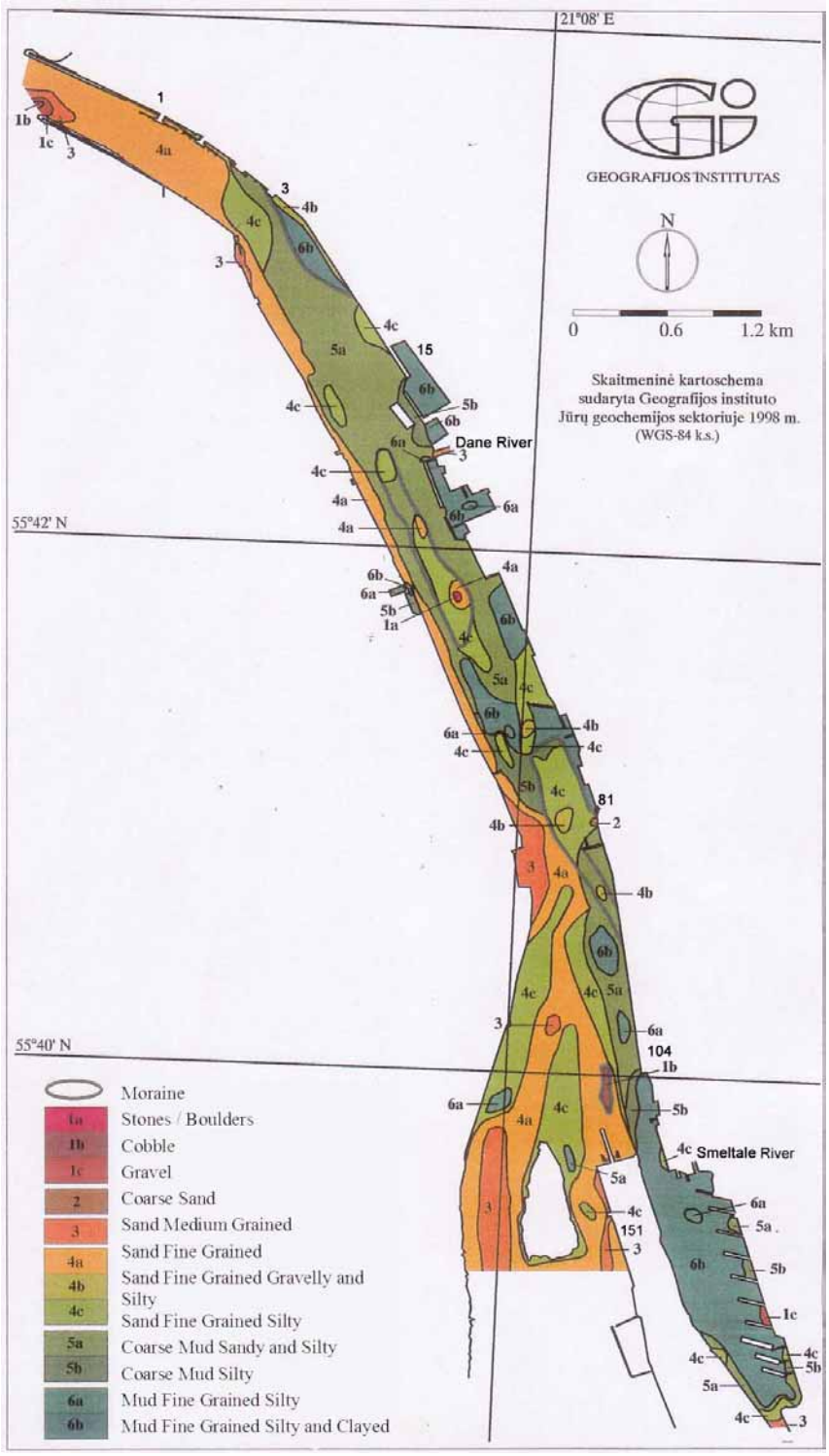


E 5 Sediment Sampling Data

The following data are included in this section.

- Existing Sediment Sampling Data by KSSA in 1998
- Sediment Sampling by JICA Study Team in 2003
- Shoreline Change for Recent 50 Years
- Sediment in Port Area Analysed with Existing Bathymetric Survey Data

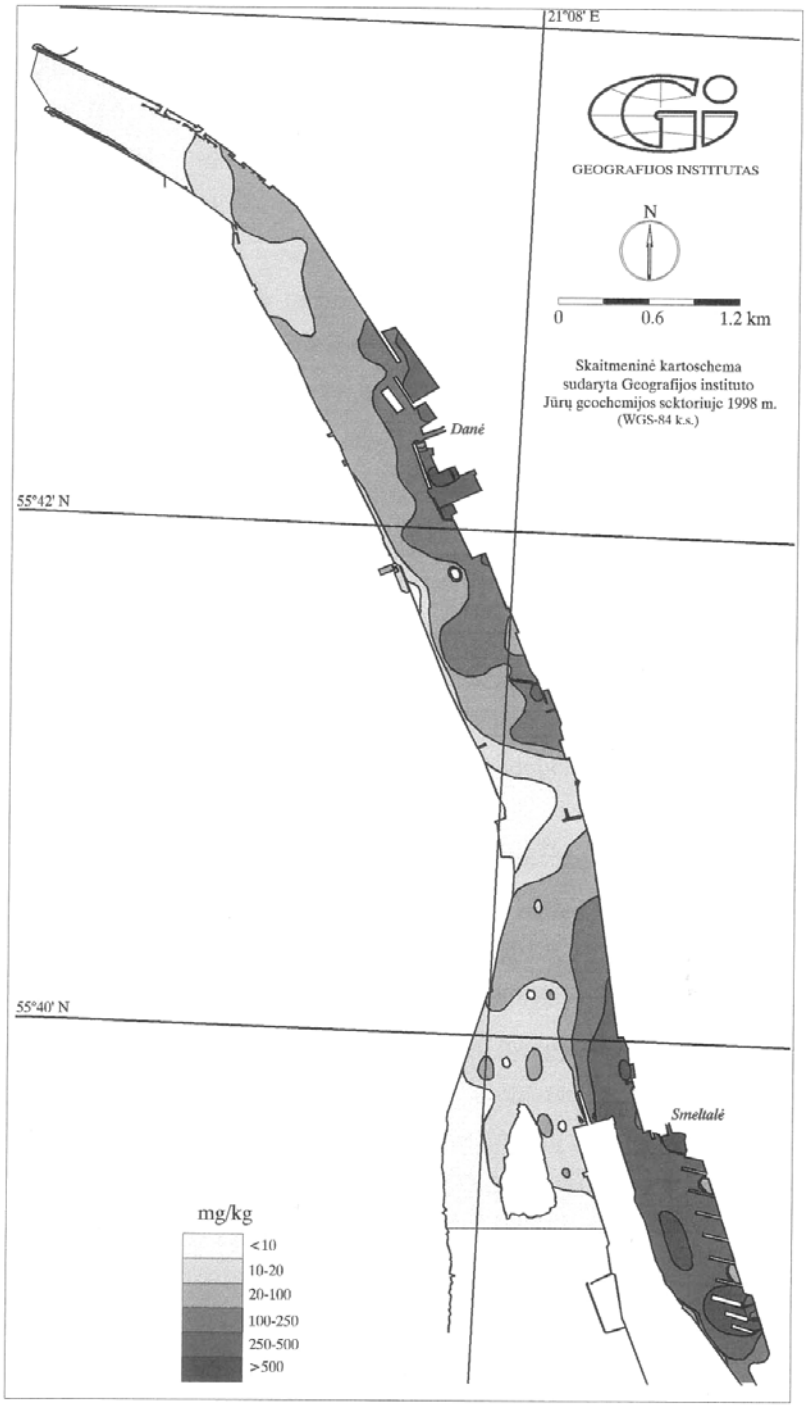
Existing Sediment Sampling Data



Source: KSSA Monitoring Report (1998)

Grain Size Distribution Map in Klaipeda Port

Klaipėdos uosto akvatorijos dugno nuosėdų litologinis–geocheminis rajonavimas. Geografijos institutas. 1998 m.

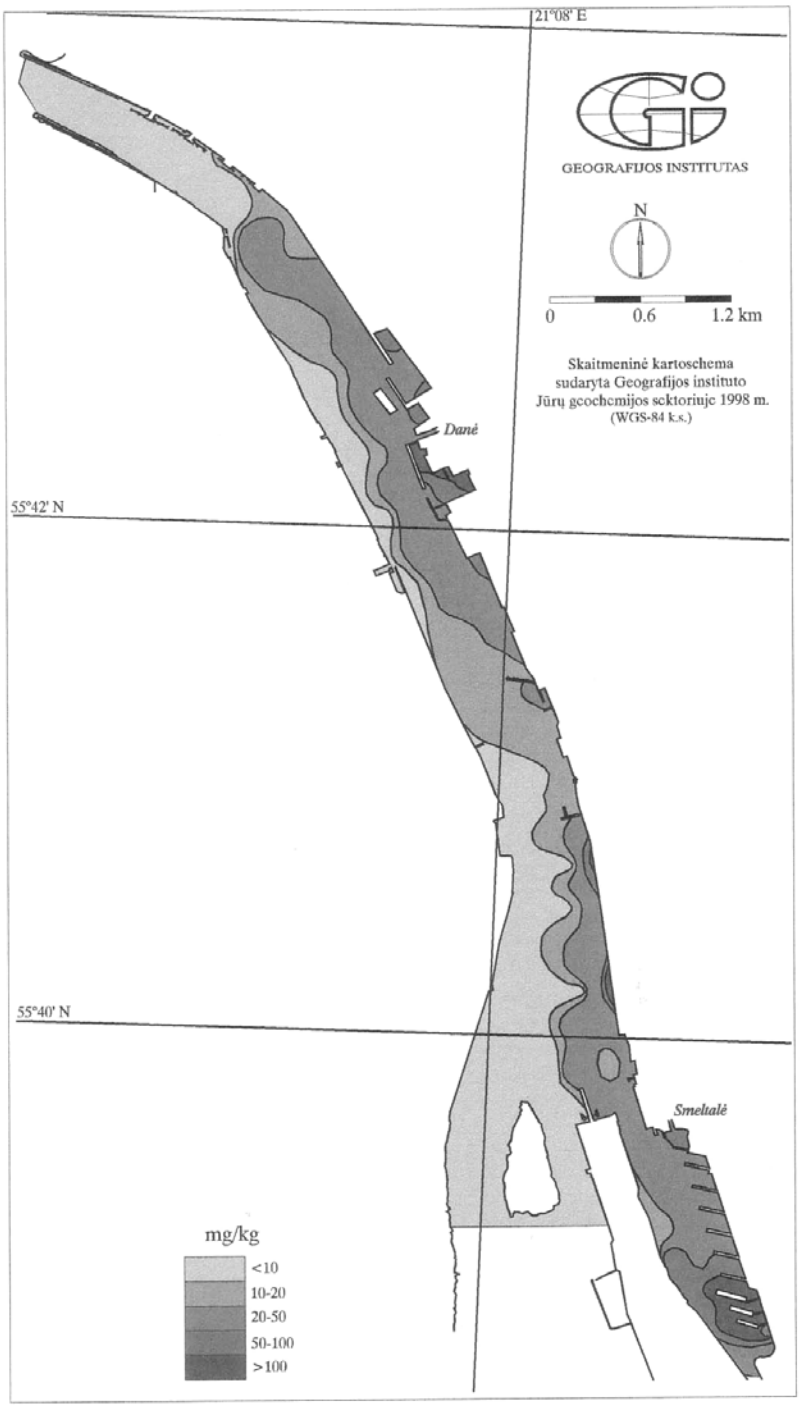


3.3 pav. Naftos produktų koncentracija Klaipėdos uosto dugno nuosėdose (horizontas 0–10 cm)

Source: KSSA Monitoring Report (1998)

Concentration of Oil

Klaipėdos uosto akvatorijos dugno nuosėdų litologinis–geocheminis rajonavimas. Geografijos institutas, 1998 m.

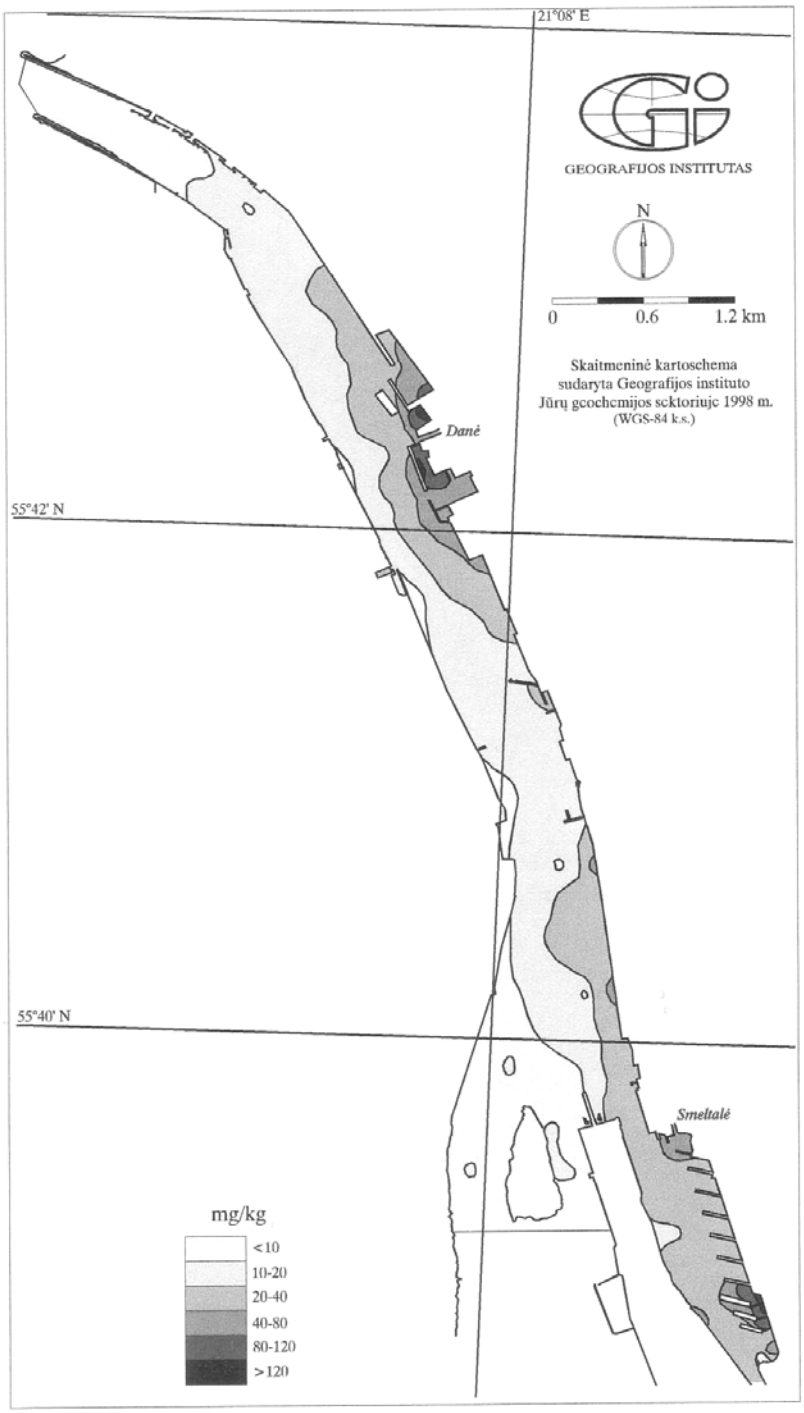


3.4 pav. Cu koncentracija Klaipėdos uosto dugno nuosėdose (horizontas 0–10 cm)

Source: KSSA Monitoring Report (1998)

Concentration of Cu

Klaipėdos uosto akvatorijos dugno nuosėdų litologinis–geocheminis rajonavimas. Geografijos institutas. 1998 m.

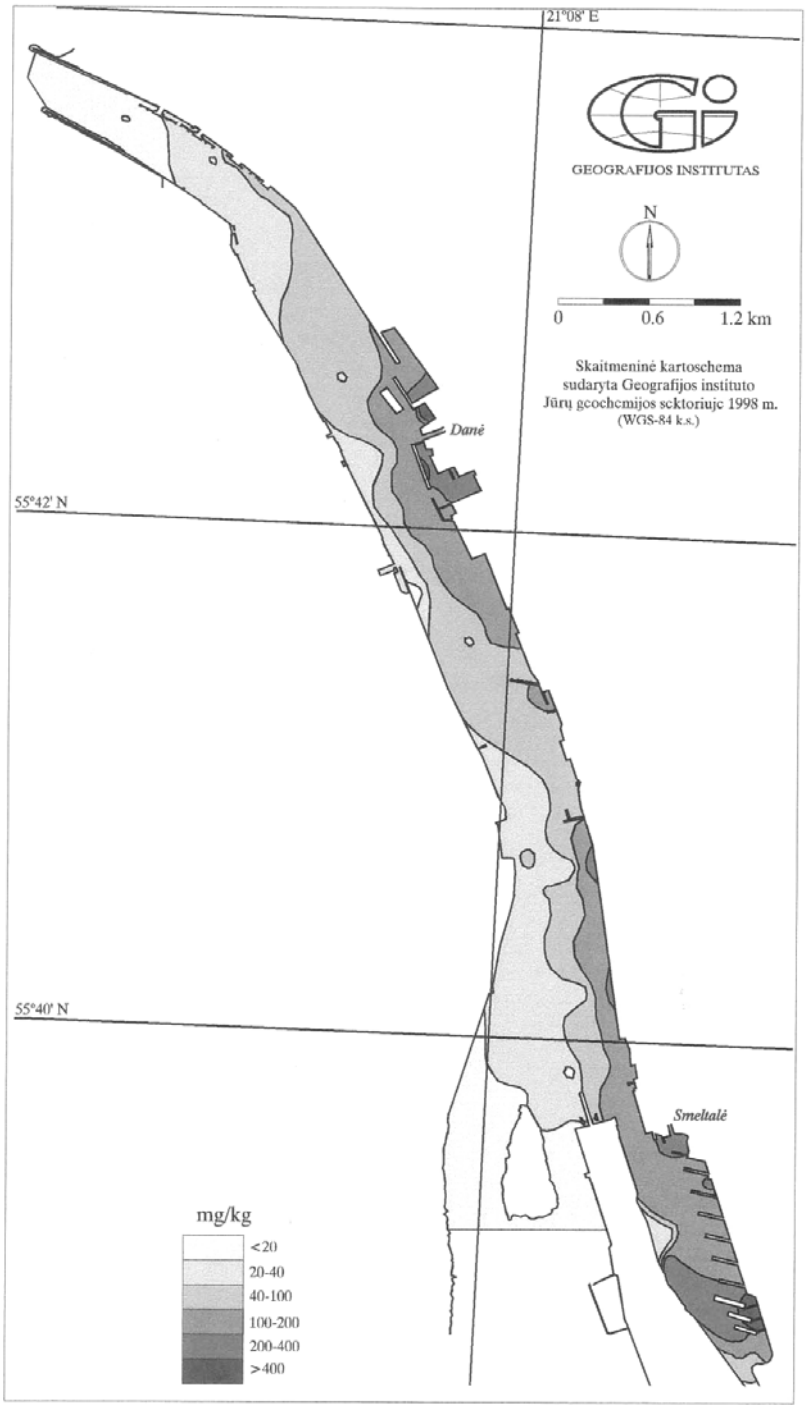


3.5 pav. Pb koncentracija Klaipėdos uosto dugno nuosėdose (horizontas 0–10 cm)

Source: KSSA Monitoring Report (1998)

Concentration of Pb

Klaipėdos uosto akvatorijos dugno nuosėdų litologinis–geocheminis rajonavimas. Geografijos institutas. 1998 m.

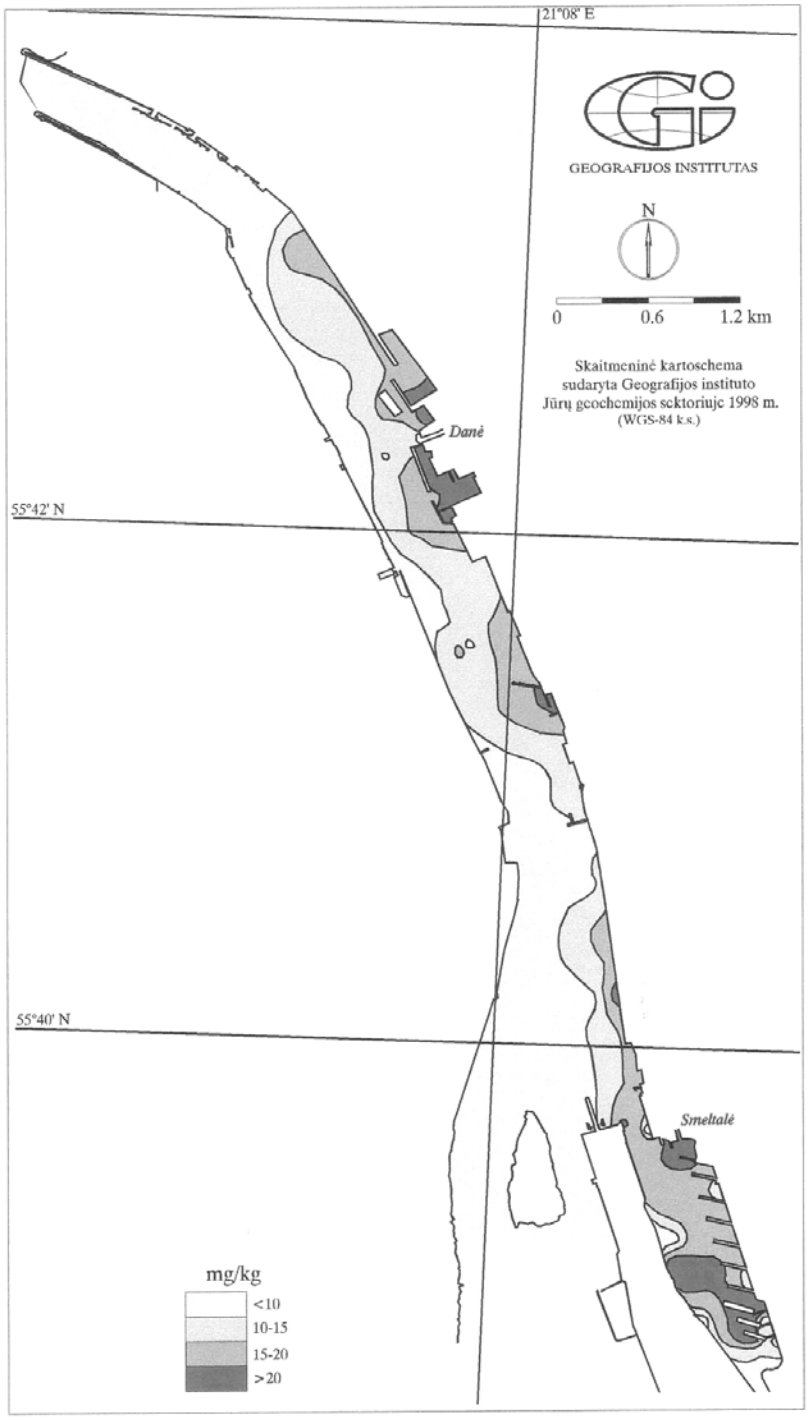


3.6 pav. Zn koncentracija Klaipėdos uosto dugno nuosėdose (horizontas 0–10 cm)

Source: KSSA Monitoring Report (1998)

Concentration of Zn

Klaipėdos uosto akvatorijos dugno nuosėdų litologinis–geocheminis rajonavimas. Geografijos institutas. 1998 m.

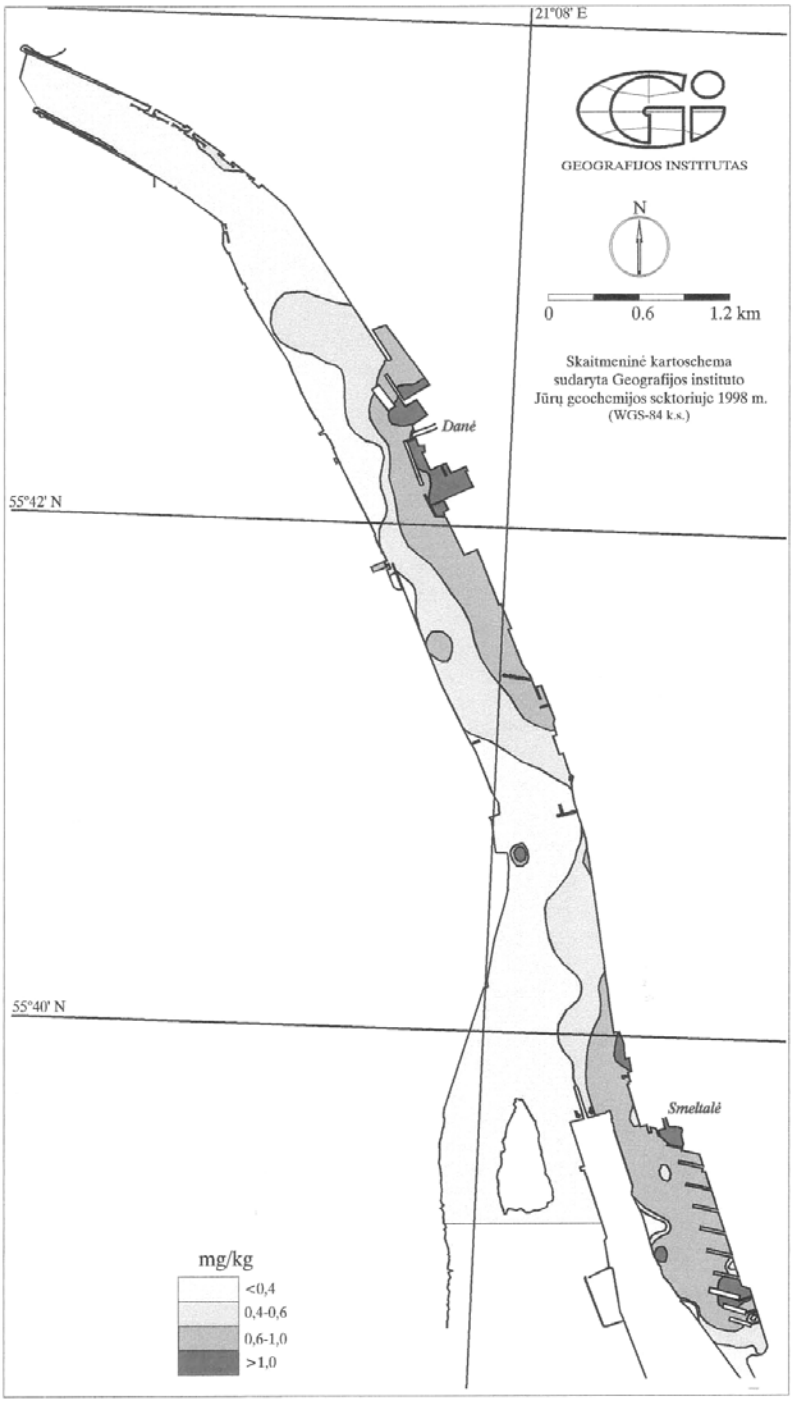


3.7 pav. Ni koncentracija Klaipėdos uosto dugno nuosėdose (horizontas 0–10 cm)

Source: KSSA Monitoring Report (1998)

Concentration of Ni

Klaipėdos uosto akvatorijos dugno nuosėdų litologinis–geocheminis rajonavimas. Geografijos institutas. 1998 m.

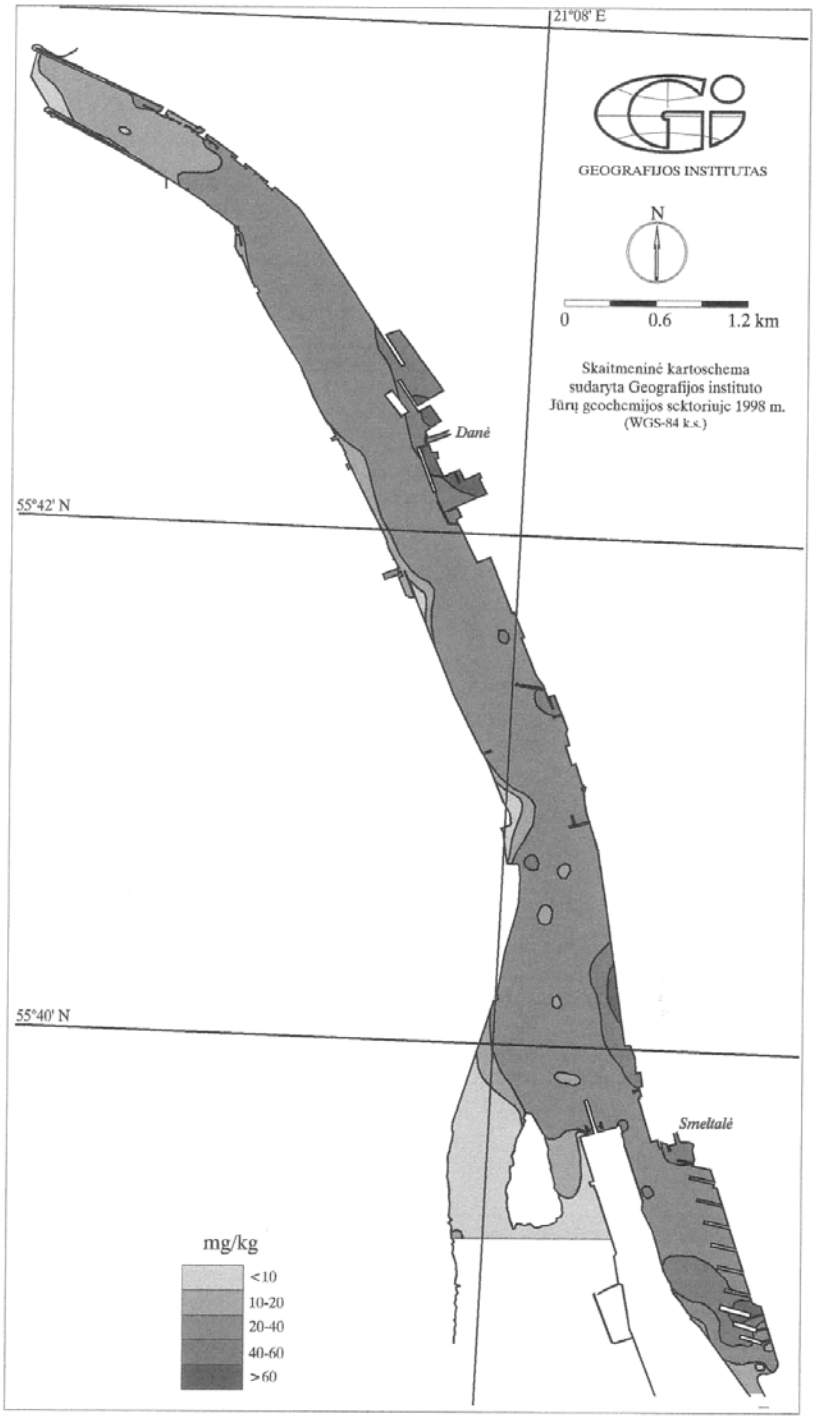


3.8 pav. Cd koncentracija Klaipėdos uosto dugno nuosėdose (horizontas 0–10 cm)

Source: KSSA Monitoring Report (1998)

Concentration of Cd

Klaipėdos uosto akvatorijos dugno nuosėdų litologinis–geocheminis rajonavimas. Geografijos institutas. 1998 m.

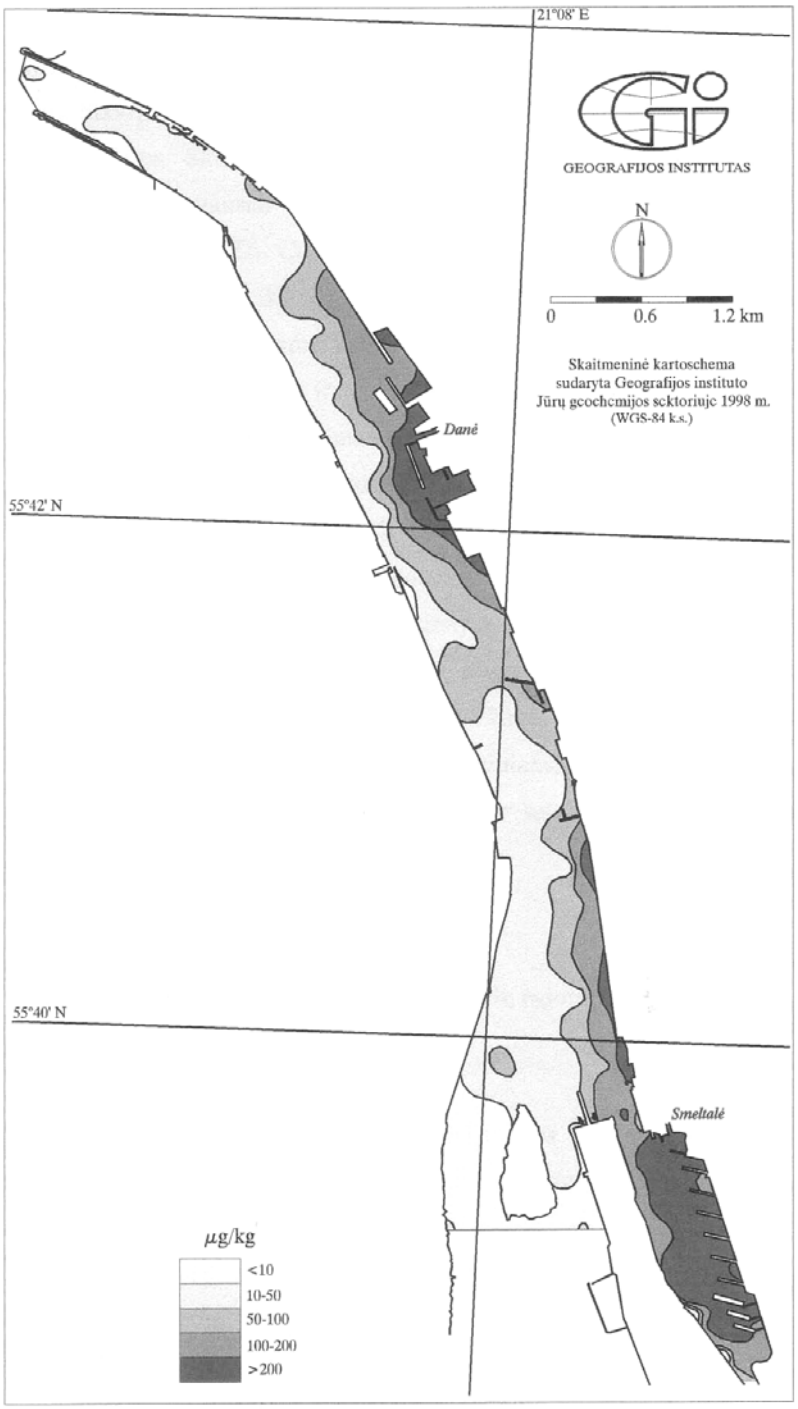


3.9 pav. Cr koncentracija Klaipėdos uosto dugno nuosėdose (horizontas 0–10 cm)

Source: KSSA Monitoring Report (1998)

Concentration of Cr

Klaipėdos uosto akvatorijos dugno nuosėdų litologinis–geocheminis rajonavimas. Geografijos institutas. 1998 m.



3.10 pav. Hg koncentracija Klaipėdos uosto dugno nuosėdose (horizontas 0–10 cm)

Source: KSSA Monitoring Report (1998)

Concentration of Hg

Co-ordinates of Sediment sampling Points

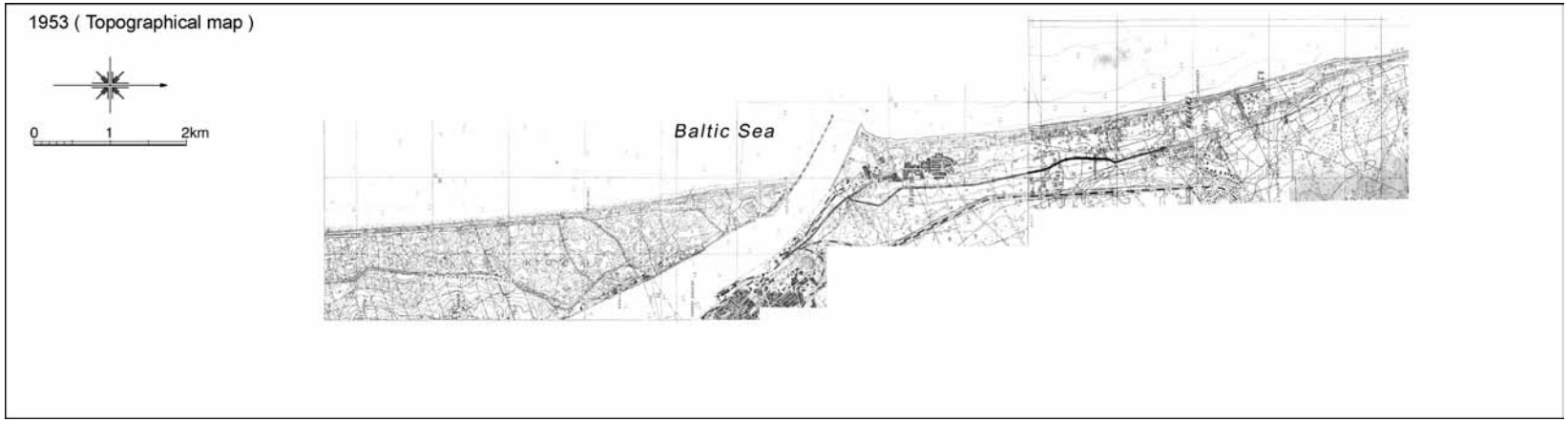
Sampl. point No	Co-ordinate LKS-94		Sea depth, m BSL
	X	Y	
P 1/9	*6182401.00*	*313368.00*	*-22.00*
P 2/9	*6182399.60*	*313824.20*	*-20.00*
P 3/9	*6182398.30*	*314340.00*	*-18.00*
P 4/9	*6182401.90*	*314660.70*	*-16.00*
P 5/9	*6182404.20*	*314979.80*	*-14.00*
P 6/9	*6182397.20*	*315294.80*	*-12.00*
P 7/9	*6182402.30*	*315780.60*	*-10.00*
P 8/9	*6182400.10*	*316199.80*	*-8.00*
P 9/9	*6182398.70*	*316522.90*	*-6.00*
P 10/9	*6182399.30*	*316696.30*	*-4.00*
P 11/9	*6182399.60*	*316853.00*	*-2.00*
P 12/9	*6182400.66*	*316941.70*	*onshore*
P 13/9	*6182401.72*	*317064.34*	*—"—*
P 14/9	*6182402.80*	*317187.00*	*—"—*
P 1/20	*6181291.40*	*313904.30*	*-22.00*
P 2/20	*6181288.40*	*314222.50*	*-20.00*
P 3 /20	*6181302.50*	*314627.00*	*-18.00*
P 4/20	*6181305.00*	*314969.70*	*-16.00*
P 5/20	*6181302.50*	*315267.20*	*-14.00*
P 6/20	*6181302.40*	*315582.40*	*-12.00*
P 7/20	*6181300.90*	*315893.20*	*-10.00*
P 8/20	*6181300.20*	*316194.30*	*-8.00*
P 9/20	*6181296.50*	*316569.20*	*-6.00*
P 10/20	*6181299.00*	*316686.10*	*-4.00*
P 11/20	*6181297.00*	*316817.80*	*-2.00*
P 12/20	*6181293.95*	*316943.98*	*onshore*
P 6/23	*6181152.00*	*313918.20*	*-22.00*
P 7/23	*6181125.65*	*314220.92*	*-20.00*
P 5/23	*6181090.38*	*314626.02*	*-18.00*
P 3/23	*6181006.75*	*315584.84*	*-12.00*
P 1/23	*6180952.17*	*316193.91*	*-8.00*
P 1/41	*6179297.30*	*314390.70*	*-22.00*
P 2/41	*6179300.90*	*314687.90*	*-20.00*
P 3/41	*6179307.60*	*315101.60*	*-18.00*
P 4/41	*6179304.00*	*315417.10*	*-16.00*
P 5/41	*6179299.90*	*315692.80*	*-14.00*
P 6/41	*6179309.80*	*315995.80*	*-12.00*
P 7/41	*6179300.90*	*316331.10*	*-10.00*
P 8/41	*6179302.60*	*316666.30*	*-8.00*
P 9/41	*6179299.60*	*316922.56*	*-6.00*
P 10/41	*6179297.75*	*317144.63*	*-4.00*
P 11/41	*6179299.98*	*317342.31*	*-2.00*
P 12/41	*6179300.10*	*317478.35*	*onshore*
P 13/41	*6179292.31*	*317615.80*	*—"—*
P 14/41	*6179300.35*	*317752.75*	*—"—*

Result of Sediments Grain Size Analysis

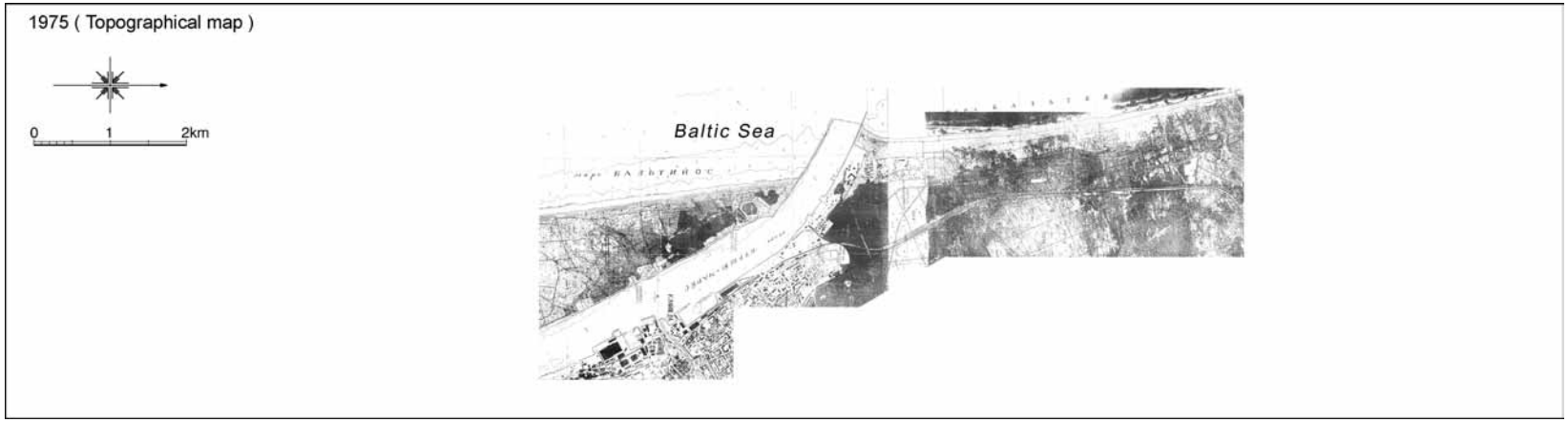
Point No	Horizon, cm	Soil description	Fraction, mm						
			2-1	1-0,5	0,5-0,25	0,25-0,1	0,1-0,063	<0,063	<0,002
P01/09	0-30 cm	Fine SAND	0,62	1,22	7,79	51,02	31,93	7,42	0,80
P01/20	0-30 cm	Silty SAND	0,19	0,16	0,28	16,21	72,28	10,87	1,11
P01/23	0-30 cm	Fine SAND	0,00	0,19	2,91	88,80	7,72	0,38	0,00
P01/41	0-30 cm	Fine SAND	0,98	1,24	8,13	60,50	23,75	5,41	0,72
P02/09	0-30 cm	Fine SAND	0,47	0,59	4,76	53,12	35,59	5,47	0,23
P02/20	0-30 cm	Sandy SILT	0,25	1,73	6,84	46,78	30,14	14,27	3,02
P02/41	0-30 cm	Sandy SILT	0,86	1,88	4,28	46,19	36,18	10,61	1,37
P03/09	0-30 cm	Fine SAND	0,46	1,54	8,78	57,41	28,27	3,55	0,00
P03/20	0-30 cm	Fine SAND	0,06	1,71	7,07	55,03	25,85	10,28	1,70
P03/23	0-30 cm	Fine SAND	0,11	0,17	0,54	76,94	17,25	4,98	0,93
P03/41	0-30 cm	Fine SAND	1,11	1,03	5,38	56,76	27,20	8,52	1,72
P04/09	0-30 cm	Fine SAND	12,93	11,39	13,12	52,13	9,60	0,84	0,14
P04/20	0-30 cm	Fine SAND	1,31	2,12	6,48	60,97	25,58	3,56	0,25
P04/41	0-30 cm	Fine SAND	0,59	0,56	2,86	53,44	33,92	8,63	1,40
P05/09	0-30 cm	Fine SAND	0,96	1,98	7,90	60,46	20,37	8,34	1,62
P05/20	0-30 cm	Fine SAND	0,87	2,59	5,01	66,33	18,68	6,53	1,25
P05/23	0-30 cm	Fine SAND	1,27	2,12	8,82	63,24	19,76	4,79	0,70
P05/41	0-30 cm	Fine SAND	0,09	0,19	1,47	68,46	25,50	4,31	0,72
P06/09	0-30 cm	Fine SAND	0,23	2,47	8,64	71,83	12,91	3,93	0,99
P06/20	0-30 cm	Fine SAND	0,70	1,59	2,80	76,12	13,21	5,59	1,37
P06/23	0-30 cm	Fine SAND	0,77	1,48	6,86	53,80	30,83	6,26	0,66
P06/41	0-30 cm	Fine SAND	0,07	0,60	2,70	66,67	27,85	2,10	0,07
P07/09	0-30 cm	Fine SAND	0,88	3,49	8,76	70,92	14,71	1,24	0,17
P07/20	0-30 cm	Fine SAND	0,36	1,33	2,03	84,84	10,78	0,66	0,00
P07/23	0-30 cm	Silty SAND	0,24	0,32	1,27	24,64	66,35	7,19	0,61
P07/41	0-30 cm	Fine SAND	0,47	2,32	3,48	68,88	23,94	0,91	0,00
P08/09	0-30 cm	Fine SAND	1,98	4,50	6,67	76,52	6,46	3,87	1,05
P08/20	0-30 cm	Fine SAND	0,32	1,41	7,18	84,46	6,39	0,25	0,00
P08/41	0-30 cm	Fine SAND	0,00	0,26	1,07	82,38	15,72	0,58	0,00
P09/09	0-30 cm	Fine SAND	0,34	1,63	3,03	83,72	10,77	0,51	0,00
P09/20	0-30 cm	Fine SAND	0,11	0,84	6,61	90,88	1,49	0,08	0,00
P09/41	0-30 cm	Fine SAND	0,40	1,19	1,94	83,33	12,84	0,30	0,00
P10/09	0-30 cm	Fine SAND	0,07	0,53	12,72	85,40	0,91	0,38	0,00
P10/20	0-30 cm	Fine SAND	0,04	0,40	6,28	91,54	1,53	0,22	0,00
P10/41	0-30 cm	Fine SAND	0,08	0,31	0,96	91,89	5,61	1,15	0,31
P11/10	0-30 cm	Fine SAND	0,38	3,32	38,94	57,24	0,10	0,02	0,00
P11/20	0-30 cm	Fine SAND	0,24	1,17	12,87	85,55	0,17	0,01	0,00
P11/41	0-30 cm	Fine SAND	0,18	0,44	1,11	88,71	5,86	3,69	1,06
P12/10	0-30 cm	Coarse SAND	50,71	27,47	12,86	8,96	0,00	0,00	0,00
P12/20	0-30 cm	Coarse SAND	9,50	80,31	7,39	2,80	0,00	0,00	0,00
P12/41	0-30 cm	Fine SAND	1,61	16,66	25,29	56,22	0,22	0,00	0,00
P13/10	0-30 cm	Fine SAND	0,50	8,88	35,12	55,29	0,19	0,02	0,00
P13/41	0-30 cm	Fine SAND	0,04	0,26	5,23	93,84	0,57	0,06	0,00
P14/10	0-30 cm	Fine SAND	0,59	1,17	14,93	82,00	0,36	0,94	0,23
P14/41	0-30 cm	Fine SAND	8,02	1,74	3,71	84,77	0,96	0,81	0,05
St.53	0-30 cm	Coarse SAND	51,05	24,53	18,69	4,38	0,82	0,53	0,00
St.54	0-30 cm	Sandy SILT	0,00	0,00	0,00	49,02	22,53	28,44	4,10
St.55	0-30 cm	Medium SAND	10,05	22,43	54,46	10,62	0,38	2,06	0,61
St.56	0-30 cm	Sandy SILT	0,00	0,00	5,29	46,26	12,17	36,29	6,64
St.57	0-30 cm	Fine SAND	1,34	3,52	10,96	64,40	8,63	11,15	2,88
St.58	0-30 cm	Coarse SAND	92,02	1,40	2,86	3,04	0,32	0,36	0,08
St.59	0-30 cm	Fine SAND	4,11	1,83	6,68	69,41	6,38	11,60	3,06
St.60	0-30 cm	Fine SAND	1,29	2,18	19,58	65,06	5,43	6,46	1,50
St.61	0-30 cm	Sandy SILT	0,00	0,00	1,02	48,45	17,10	33,43	4,34
St.62	0-30 cm	Fine SAND	0,52	0,89	39,83	53,65	2,07	3,04	0,71

Concentartion of the heavy metall, oil products and organic matter

Stoties Nr.	Horizontas, cm	Grunto tipas	Koncentracija, mg/kg								OM, %
			Cu	Pb	Zn	Ni	Cr	Cd	Hg	Naftos produktai	
P01/20	0-30 cm	Silty SAND	2.8	8.0	20.0	2.0	20.6	0.1	0.01	3.4	1.42
P01/23	0-30 cm	Fine SAND	1.1	7.1	12.0	0.9	13.1	0.1	<0.01	0.8	0.11
P02/09	0-30 cm	Fine SAND	2.3	8.0	21.0	1.9	19.5	0.3	<0.01	1.5	0.90
P02/20	0-30 cm	Sandy SILT	4.7	8.7	27.0	3.3	20.4	0.3	0.02	9.4	2.04
P02/41	0-30 cm	Sandy SILT	3.7	9.0	23.0	2.4	19.4	0.1	0.01	8.1	1.34
P03/20	0-30 cm	Fine SAND	4.6	12.3	30.0	3.1	21.2	0.2	<0.01	6.3	1.40
P03/23	0-30 cm	Fine SAND	1.7	5.9	12.0	1.2	13.7	0.1	<0.01	2.6	0.48
P04/20	0-30 cm	Fine SAND	3.0	8.2	25.0	0.9	17.1	0.2	0.02	3.1	1.29
P05/20	0-30 cm	Fine SAND	6.8	7.2	20.0	1.8	19.6	<0.1	<0.01	2.8	1.09
P05/23	0-30 cm	Fine SAND	3.8	7.3	21.0	1.8	17.2	0.1	<0.01	1.3	0.50
P06/20	0-30 cm	Fine SAND	3.9	8.9	23.0	1.9	16.9	<0.1	<0.01	3.1	0.63
P06/23	0-30 cm	Fine SAND	4.1	8.5	27.0	2.3	20.1	0.1	0.01	3.9	0.93
P07/09	0-30 cm	Fine SAND	3.5	8.1	34.0	2.4	25.8	<0.1	0.01	2.0	0.41
P07/20	0-30 cm	Fine SAND	3.8	7.9	29.0	1.9	21.5	0.1	<0.01	2.5	0.49
P07/23	0-30 cm	Silty SAND	3.6	8.6	22.0	2.8	24.1	0.2	<0.01	3.6	0.91
P07/41	0-30 cm	Fine SAND	4.1	10.7	31.0	1.6	35.2	0.2	0.02	3.2	0.44
P08/20	0-30 cm	Fine SAND	2.2	7.1	11.0	1.4	12.1	0.1	<0.01	2.2	0.40
P09/20	0-30 cm	Fine SAND	0.7	5.8	8.0	0.4	7.6	<0.1	<0.01	2.9	0.26
P10/20	0-30 cm	Fine SAND	1.1	4.9	7.0	0.6	4.4	<0.1	<0.01	1.1	0.25
P11/20	0-30 cm	Fine SAND	1.9	5.8	8.0	0.5	3.2	0.1	<0.01	1.5	0.20
P12/20	0-30 cm	Coarse SAND	1.5	9.7	8.0	0.8	2.6	<0.1	<0.01	0.5	0.05
St.53	0-30 cm	Coarse SAND	2.3	10.1	12.0	1.4	5.1	0.1	<0.01	0.9	0.57
St.54	0-30 cm	Sandy SILT	5.4	9.6	38.0	2.8	17.3	0.1	0.02	10.6	2.03
St.55	0-30 cm	Medium SAND	2.3	7.1	7.0	1.5	1.4	<0.1	0.01	1.9	0.22
St.56	0-30 cm	Sandy SILT	8.1	8.6	28.0	2.8	19.5	0.2	<0.01	15.8	2.58
St.57	0-30 cm	Fine SAND	3.4	7.1	14.0	2.4	15.0	<0.1	0.01	10.2	1.8
St.58	0-30 cm	Fine SAND	2.4	7.6	12.0	0.9	4.7	<0.1	<0.01	2.5	0.68
St.59	0-30 cm	Fine SAND	2.7	6.6	14.0	2.6	20.8	0.1	0.01	8.9	2.18
St.60	0-30 cm	Fine SAND	2.7	6.5	7.0	1.3	6.2	<0.1	0.01	4.7	0.84
St.61	0-30 cm	Sandy SILT	5.7	7.9	27.	5.8	34.9	0.1	0.01	21.9	4.21
St.62	0-30 cm	Fine SAND	1.7	5.1	6.0	0.9	3.0	<0.1	<0.01	4.8	0.59



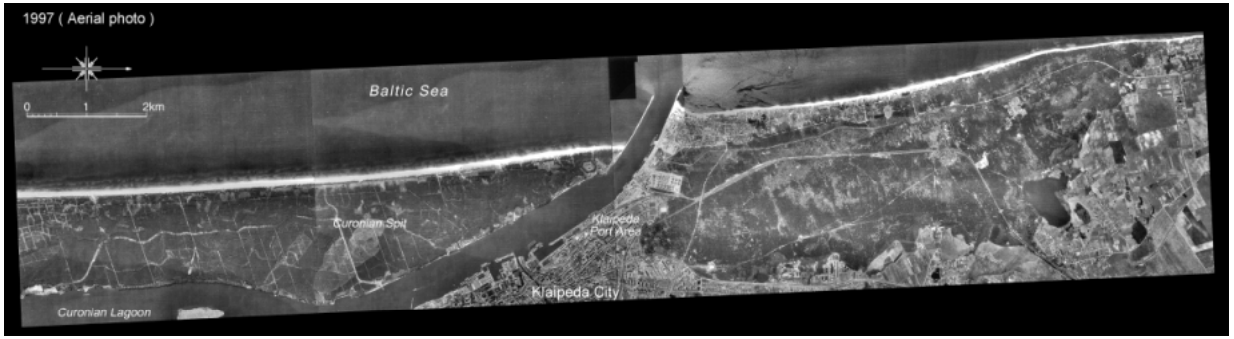
(1) 1953



(2) 1975

Figure Shoreline Change for Recent 50 Years

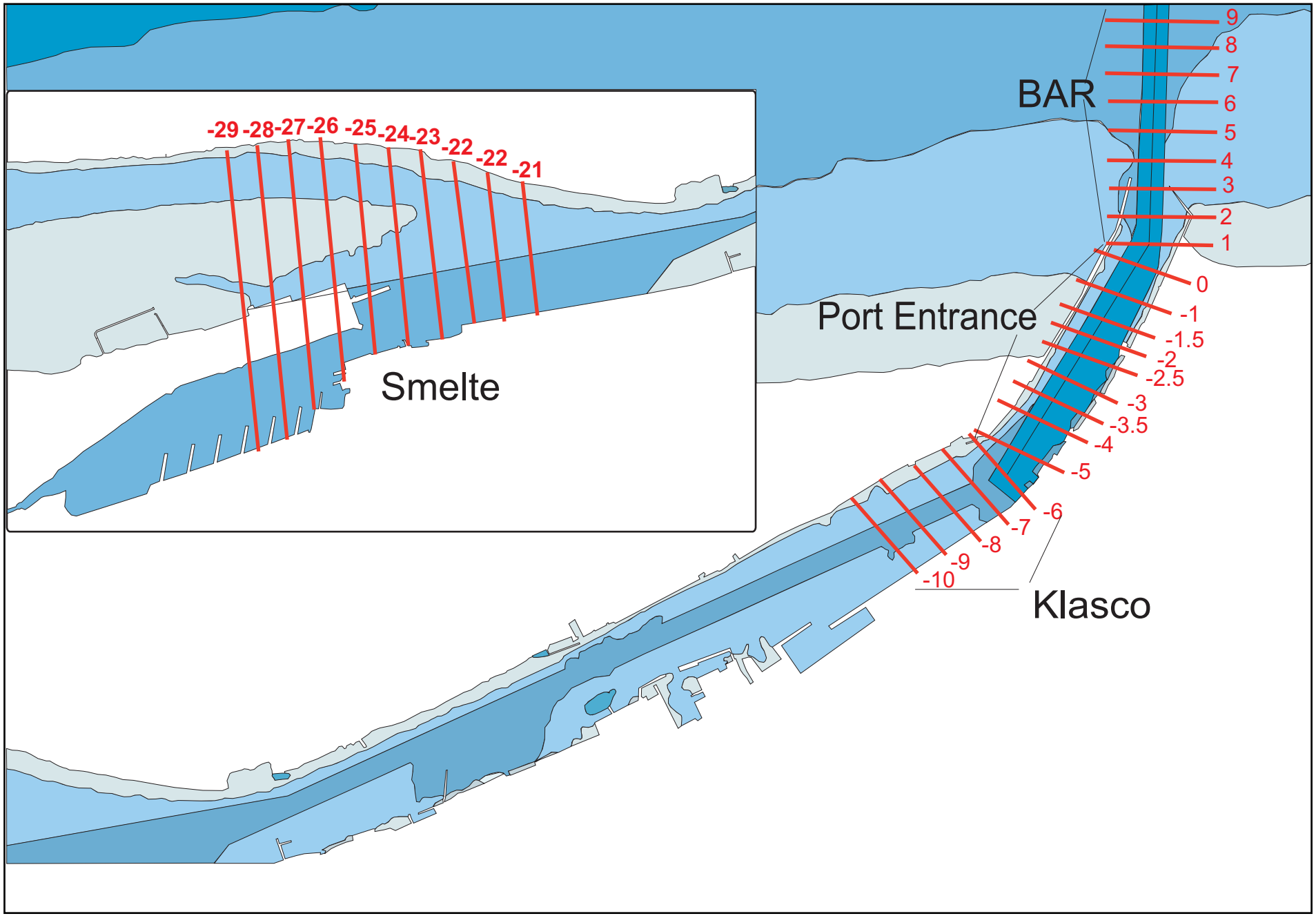
(3) 1991



(4) 1997

(5) 2002

Figure Shoreline Change for Recent 50 Years


BAR
Port Entrance
Klasco
Smelte
9
8
7
6
5
4
3
2
1
0
-1
-1.5
-2
-2.5
-3
-3.5
-4
-5
-6
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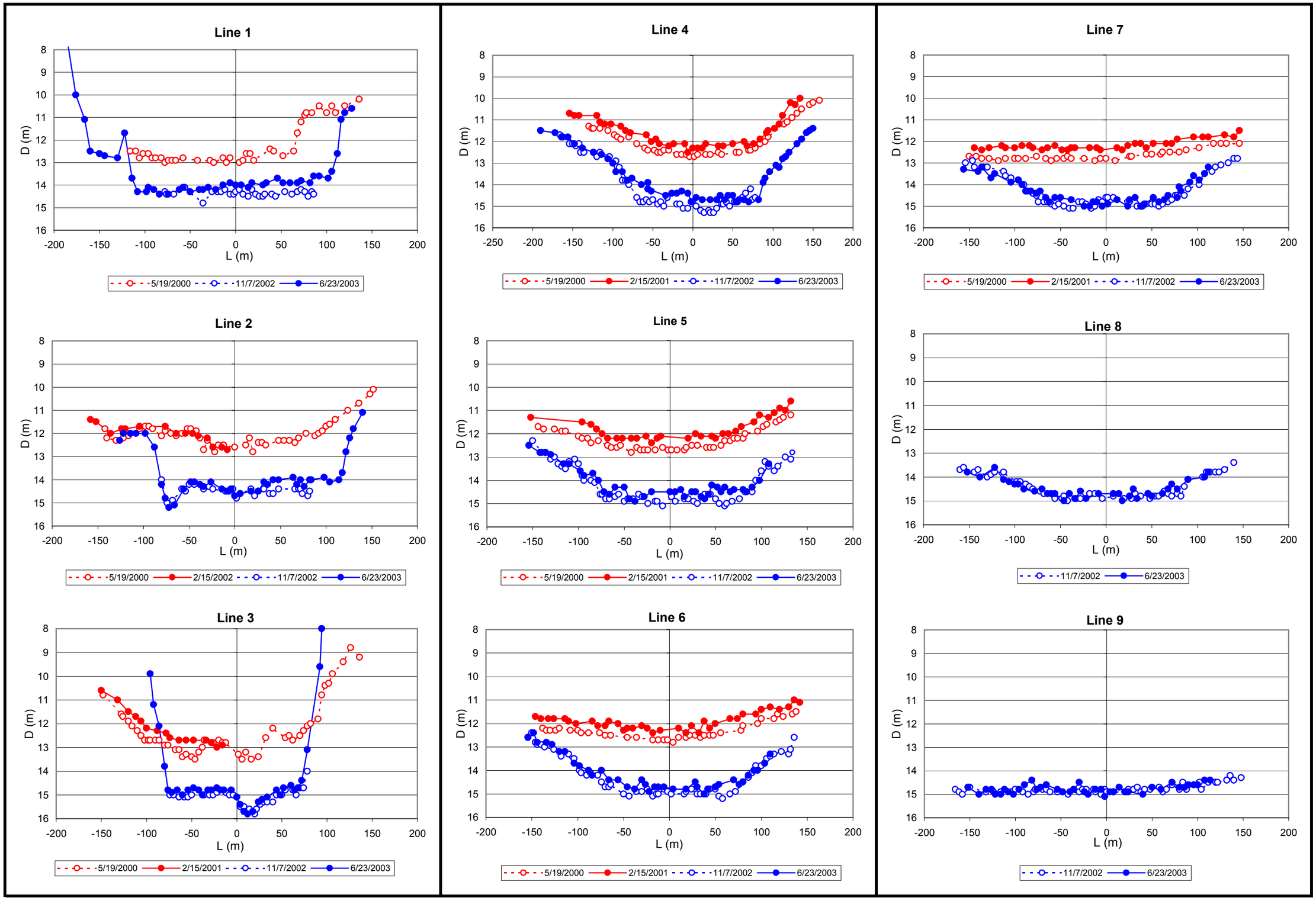
-22
-22
-21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L (m)
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11/7/2002
6/23/2003
Line 2
D (m)
L (m)
5/19/2000
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11/7/2002
6/23/2003
Line 3
D (m)
L (m)
5/19/2000
2/15/2001
11/7/2002
6/23/2003
Line 4
D (m)
L (m)
5/19/2000
2/15/2001
11/7/2002
6/23/2003
Line 5
D (m)
L (m)
5/19/2000
2/15/2001
11/7/2002
6/23/2003
Line 6
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11/7/2002
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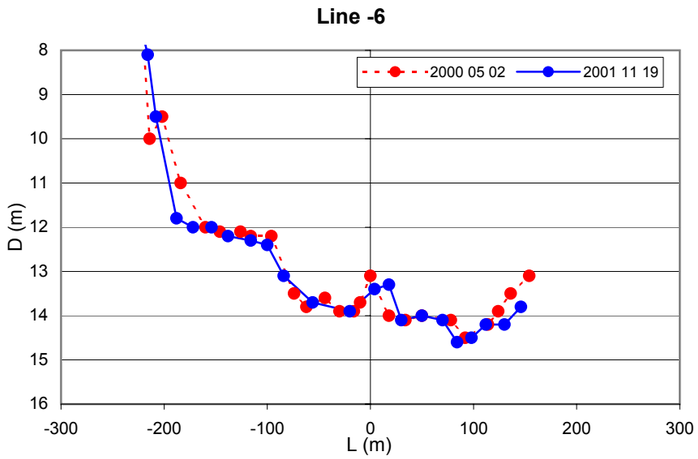
Line 7
D (m)
L (m)
5/19/2000
2/15/2001
11/7/2002
6/23/2003
Line 8
D (m)
L (m)
11/7/2002
6/23/2003
Line 9
D (m)
L (m)
11/7/2002
6/23/2003

Bar Area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2001 11 19
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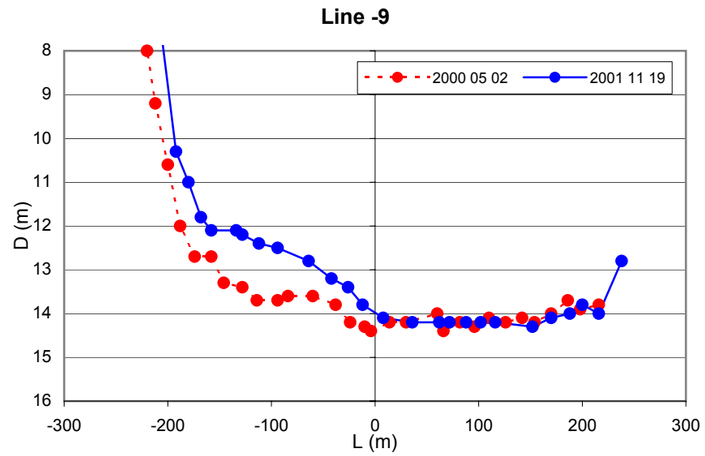
L (m)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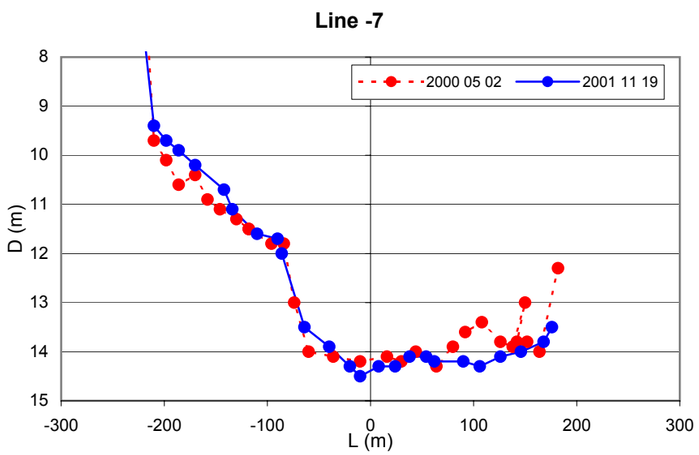
L (m)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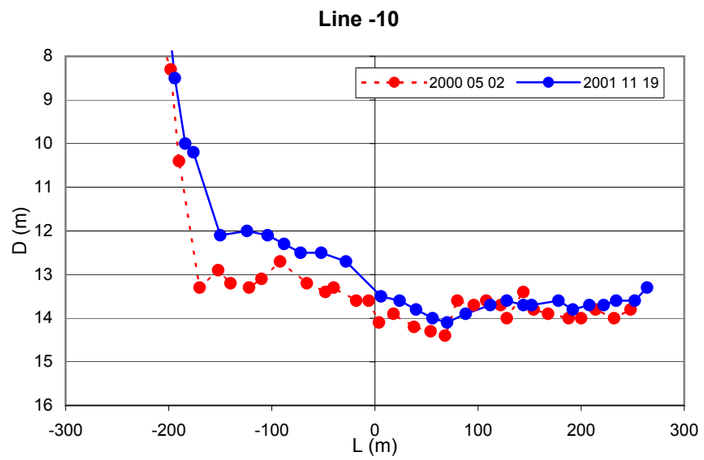
L (m)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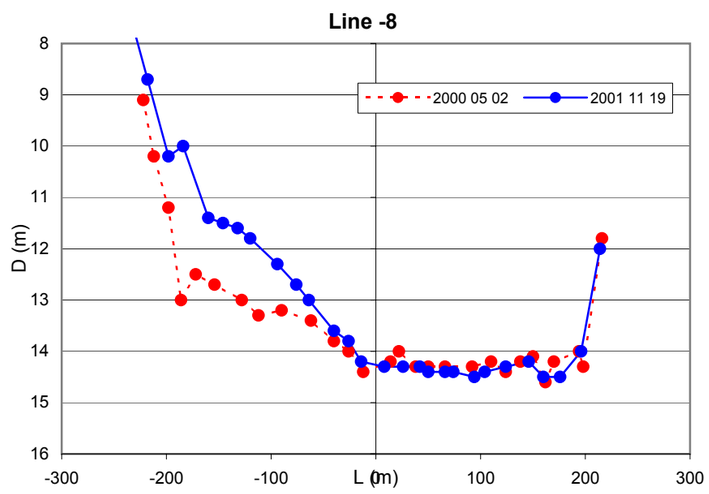
L (m)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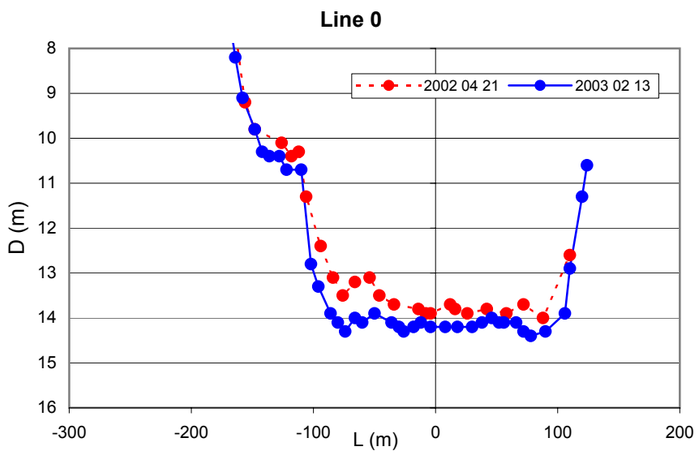
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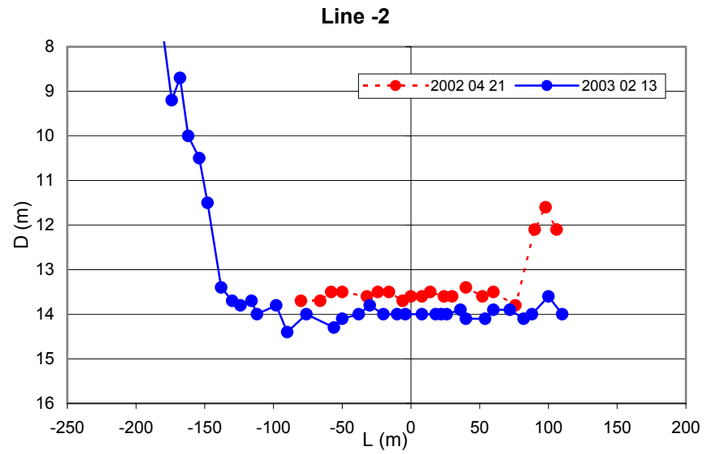
L (m)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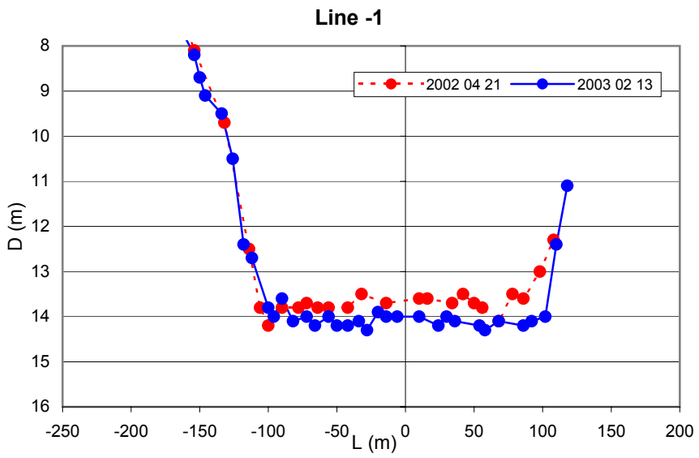
2003 02 13
D (m)
L (m)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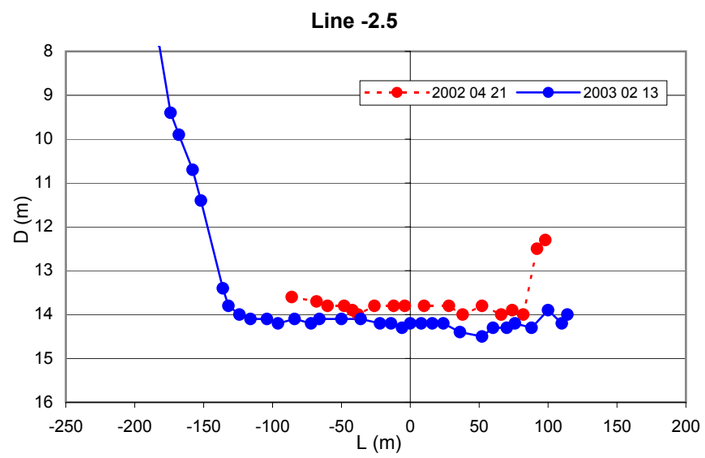
2002 04 21
2003 02 13
D (m)
L (m)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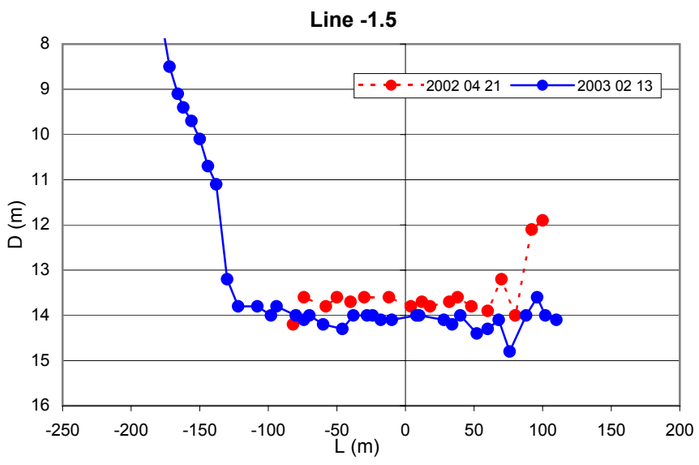
2003 02 13
D (m)
L (m)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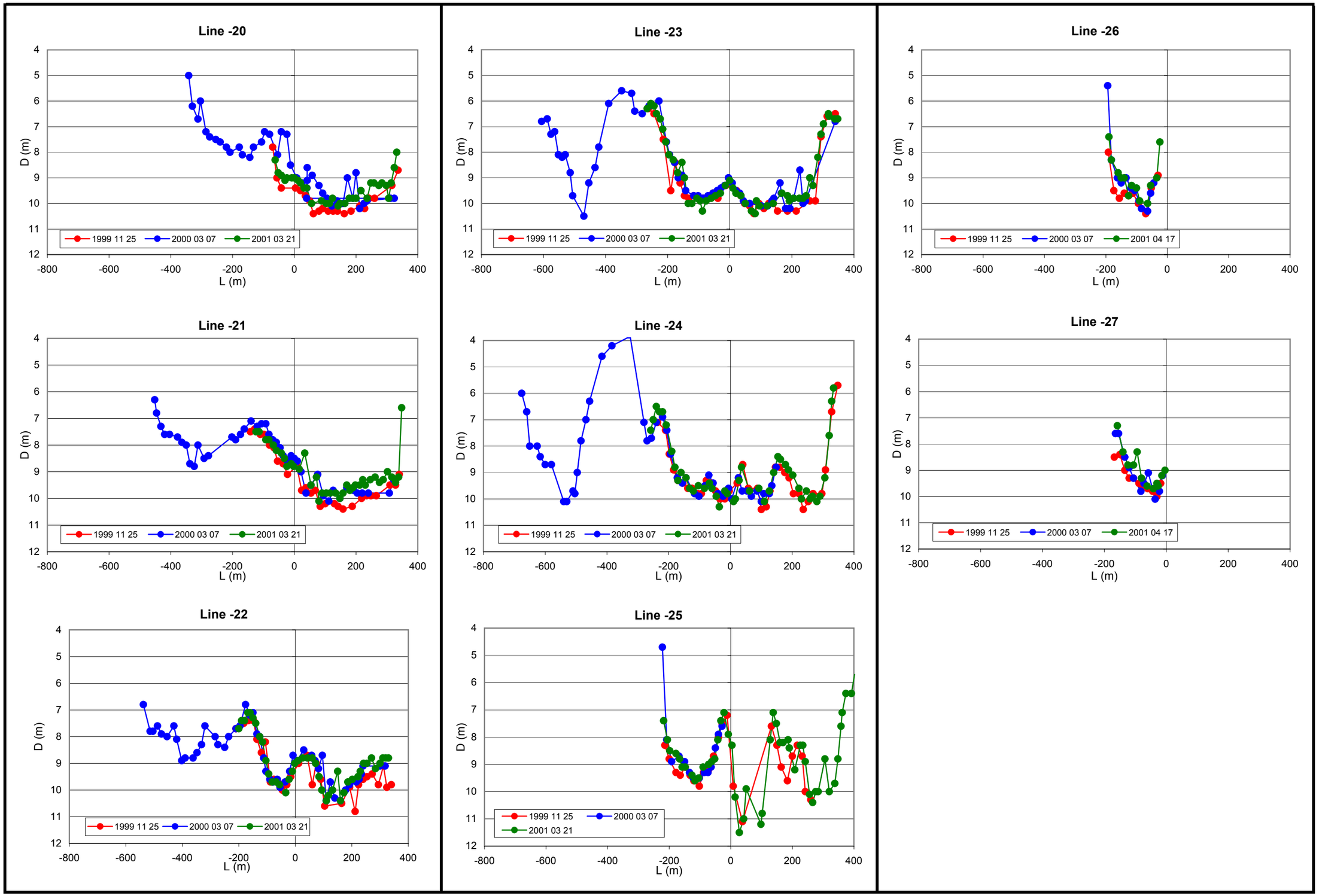
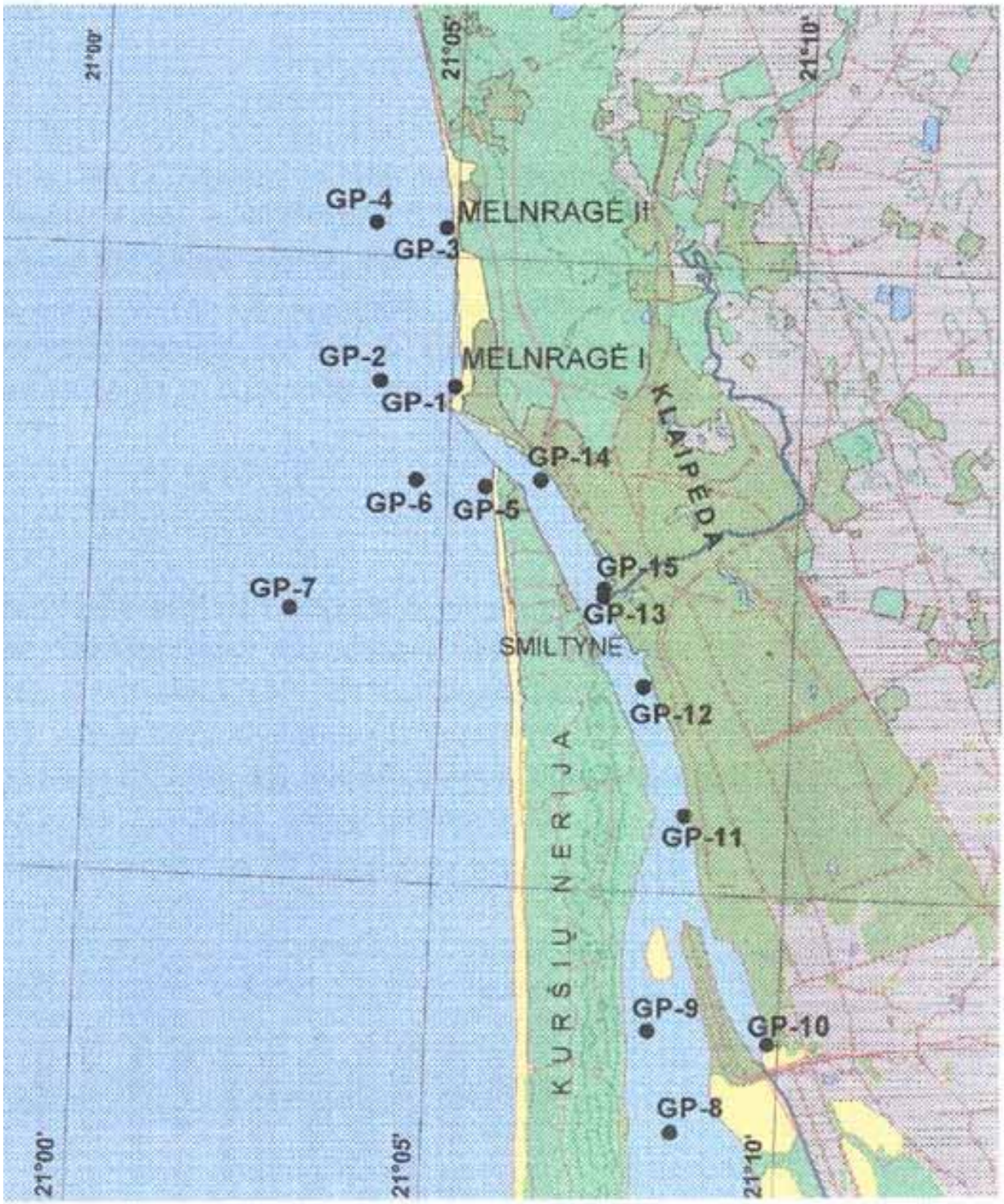
2003 02 13
D (m)
L (m)


Line -20
Line -21
Line -22
Line -23
Line -24
Line -25
Line -26
Line -27
D (m)
L (m)
1999 11 25
2000 03 07
2001 03 21
2001 04 17

Smelte Area

E.6 Water Quality

Water sampling and laboratory tests had been carried out two times by JICA Study Team in December 2003. Location map of sampling points and results of laboratory test are presented below.



Location Map of Water Quality surveyed by JICA Study Team

Date	Research spots	Coordinates	Horizon	Water T, ^{0}C	S,‰	O_2, mg/l	O_2 %	BOD7 mgO2/l	Suspended matter mg/l	NO_2 mg/l	NO_3 mg/l	NH_4 mg/l	PO_4 mg/l	Oil, mg/l	Total amount of coliform bacteria cells/100 ml of water	The amount of faecal coliform bacteria (*E.coli*)cells/100 ml water
2003 12 11	GP-1	55^{0}44'00" 21^{0}05'08"	Surface	4.6	5.5	14.52	117	2.04	31	0.01	0.21	0.068	0.03	0,007	10	0
2003 12 10	GP-2	55^{0}44'33" 21^{0}04'05"	Mid.	5.1	5.62	14.25	116	4.51	8.9	0.011	0.18	0.078	0.02	0,030	10	0
2003 12 11	GP-3	55^{0}45'24" 21^{0}04'58"	Surface	4.2	5.09	14.81	118	1.36	37.6	0.008	0.26	0.076	0.026	0,015	20	0
2003 12 10	GP-4	55^0 45'25" 21^{0}03'90"	Mid.	5.2	5.95	13.99	115	2.95	11.1	0.01	0.14	0.047	0.01	0,023	8	0
2003 12 10	GP-5	55^{0}43'27" 21^{0}05'60"	Surface	5.6	6.27	14.27	119	1.68	44.4	0.007	0.11	0.051	0.025	0,038	10	0
2003 12 10	GP-6	55^{0}43'27" 21^{0}04'60"	Mid.	5.7	6.6	13.62	113	3.25	22.9	0.006	0.089	0.039	0.016	0,024	1	0
2003 12 10	GP-7	55^{0}42'30" 21^{0}02'89"	Mid.	5.9	6.72	13.89	117	1.81	4	0.007	0.076	0.033	0.007	0,018	2	0
2003 12 11	GP-8	55^{0}38'10" 21^{0}08'49"	Mid.	2.8	1.24	13.1	97	3.04	62.8	0.011	0.49	0.055	0.035	0,013	100	10
2003 12 11	GP-9	55^{0}38'93" 21^{0}08'13"	Mid.	2.7	1.14	12.98	97	2.36	68	0.009	0.53	0.057	0.023	0,016	100	10
2003 12 11	GP-10	55^{0}38'79" 21^{0}09'75"	Mid.	3.6	3.1	13.32	99	2.18	18.4	0.015	0.49	0.094	0.032	0,011	500	100
2003 12 11	GP-11	55^{0}40'62" 21^{0}08'54"	Mid.	2.7	1.4	13	100	2.28	44.2	0.011	0.6	0.057	0.028	0,010	100	10
2003 12 11	GP-12	55^{0}41'62" 21^{0}07'87"	Mid.	2.8	1.49	13.42	100	2.32	41.6	0.01	0.67	0.067	0.03	0,019	100	10
2003 12 11	GP-13	55^{0}42'33' 21^{0}07'24"	Mid.	3.1	1.43	12	90	2.42	29.2	0.014	0.94	0.12	0.042	0,010	500	100
2003 12 11	GP-14	55^{0}43'25" 21^{0}06'32"	Mid.	3	1.49	13	95	2.32	45	0.01	0.6	0.066	0,032	0,011	200	200
2003 12 11	GP-15	55^{0}42'40" 21^{0}07'33"	Mid.	3.3	1.43	11.61	89	2.16	26.2	0.014	0.92	0.11	0.033	0,016	800	100

Date	Research spots	Coordinates	Horizon	Water T, ^{0}C	S,‰o	O_2, mg/l	O_2 %	BOD7 mgO2/l	Suspended matter mg/l	NO_2 mg/l	NO_3 mg/l	NH_4 mg/l	PO_4 mg/l	Oil, mg/l	Total amount of coliform bacteria cells/100 ml of water	The amount of faecal coliform bacteria (*E.coli*)cells/100 ml water
2003 12 18	GP-1	55^{0}44'00" 21^{0}05'08"	Surface	5	6.35	12.05	98	2.01	22.2	0.01	0.13	0.042	0.024	0,011	8	0
2003 12 18	GP-2	55^{0}44'33" 21^{0}04'05"	Mid.	5	6.24	11.87	97	1.9	10.4	0.01	0.13	0.069	0.024	0,019	8	0
2003 12 18	GP-3	55^{0}45'24" 21^{0}04'58"	Surface	5	6.27	12.14	99	2.02	69.4	0.01	0.13	0.054	0.025	0,021	8	0
2003 12 18	GP-4	55^0 45'25" 21^{0}03'90"	Mid.	5.1	6.33	11.91	98	1.83	12.4	0.009	0.12	0.055	0.02	0,018	10	0
2003 12 18	GP-5	55^{0}43'27" 21^{0}05'60"	Surface	5	6.71	11.75	97	1.57	40	0.01	0.09	0.03	0.021	0,014	8	0
2003 12 18	GP-6	55^{0}43'27" 21^{0}04'60"	Mid.	5.2	6.42	11.8	97	1.42	7	0.01	0.14	0.054	0.023	0,026	2	0
2003 12 18	GP-7	55^{0}42'30" 21^{0}02'89"	Mid.	5.9	6.62	11.53	97	1.16	4.6	0.01	0.1	0.033	0.015	0,019	2	0
2003 12 18	GP-8	55^{0}38'10" 21^{0}08'49"	Mid.	3.2	5.93	12.34	96	1.28	14	0.009	0.19	0.081	0.024	0,013	10	0
2003 12 18	GP-9	55^{0}38'93" 21^{0}08'13"	Mid.	3.2	5.89	12.38	96	1.72	15.5	0.009	0.18	0.078	0.025	0,012	10	0
2003 12 18	GP-10	55^{0}38'79" 21^{0}09'75"	Mid.	3.1	5.87	11.39	88	1.71	17.2	0.01	0.38	0.14	0.031	0,016	100	50
2003 12 18	GP-11	55^{0}40'62" 21^{0}08'54"	Mid.	3.2	5.87	12.23	95	2.47	22.6	0.009	0.23	0.14	0.026	0,021	10	0
2003 12 18	GP-12	55^{0}41'62" 21^{0}07'87"	Mid.	3.2	5.9	12.19	95	1.68	16.4	0.01	0.22	0.1	0.022	0,009	10	0
2003 12 18	GP-13	55^{0}42'33' 21^{0}07'24"	Mid.	3.1	5.86	12.08	94	1.54	18.4	0.01	0.25	0.1	0.023	0,014	100	10
2003 12 18	GP-14	55^{0}43'25" 21^{0}06'32"	Mid.	3.2	5.84	12.08	94	1.93	39.6	0.01	0.26	0.11	0.027	0,014	200	50
2003 12 18	GP-15	55^{0}42'40" 21^{0}07'33"	Mid.	3.1	5.8	12.16	94	2.22	17.4	0.01	0.3	0.13	0.027	0,021	100	40