PATRICK ENGINEERING INC. — BORING NUMBER B-3-97 — SHEET 1 OF 2

CLIENT: Illinois Department of Natural Resources
PROJECT & NO.: Lake Michigan Leakage Control - L6091.A0-2
LOCATION: US North Pier, See boring location plan, 94 Streeter Dr., Chicago, IL N 1,903,052.5 E 696,717.4
LOGGED BY: PJC
GROUND ELEVATION: 10.1

ELEVATION	DEPTH (FT)	SOIL/ROCK DESCRIPTION
10.1	0.0	Black silty clay, trace organics, little coarse to fine sand, trace brick fragments, medium stiff, medium to high plasticity, moist to wet CL -FILL- 2.0" medium to fine gravel with little coarse to fine sand at 3.4' Black and brown at 4.0'
3.6	6.5	Apparent 4.6' thick concrete slab with rebar reinforcement from 6.5' to 11.1'. Fragments of concrete slab inside augers. Coarse to fine gravelin cuttings, auger flights catching on rebar. -FILL-
-0.1	10.2	▽
-1.0	11.1	White and black coarse to fine gravel, some coarse to fine sand, little silt, trace cinders, dense, saturated, possible cobbles and boulders GM -FILL-
-9.9	20.0	

SAMPLE TYPE & NO.	DEPTH (FT)	RECOVERY (IN)	BLOW COUNTS	Water Content	NOTES & TEST RESULTS
SS-1	0.0-2.0	19"R	2 3 7 4	27.3	PID=Photo-ionization device results in parts per million (ppm) SS-1: PID=5.5ppm
SS-2	2.0-4.0	18"R	7 16 9 8	11.8	PID=6.7ppm
SS-3	4.0-6.0	18"R	4 5 5 11	26.3	PID=6.3ppm Auger grinding
SS-4	6.0-6.4	4"R	50+/5"	6.6	PID=6.2ppm
SS-5	8.0	0"R	50/0"		Auger grinding
				18.8	PID=7.0ppm Auger grinding
SS-6	11.1-12.0		2/5"		SS-6: 4"R PID=8.1ppm Auger grinding
SS-7	12.0-14.0	10"R	3 2 3 4	22.8	
SS-8	14.0-15.3	12"R	3 17 50+/4"	24.4	PID=8.0ppm
SS-9	16.0-18.0	9"R	4 8 8 13	72.3	PID=6.3ppm Auger grinding
SS-10	18.0-20.0	6"R	9 8 9 8	10.3	PID=7.3ppm

DRILLING CONTRACTOR Patrick Drilling; DRILLING METHOD 4 1/4" I.D. HSA; DRILLING EQUIPMENT CME 75 ATV; DRILLING STARTED 4/4/97 ENDED 4/4/97
REMARKS: Piezometer P-3-97 constructed in completed borehole. See installation
WATER LEVEL (ft.): ▽ 11.1' during drilling; ▼ 10.6' imm. after drilling; ▼ 10.2 4/18/97

PATRICK ENGINEERING INC. — BORING NUMBER B-3-97 — SHEET 2 OF 2

CLIENT: Illinois Department of Natural Resources
PROJECT & NO.: Lake Michigan Leakage Control - L6091.A0-2
LOCATION: US North Pier, See boring location plan, 94 Streeter Dr., Chicago, IL N 1,903,052.5 E 696,717.4
LOGGED BY: PJC
GROUND ELEVATION: 10.1

ELEVATION	DEPTH (FT)	SOIL/ROCK DESCRIPTION
-9.9	20.0	White and black coarse to fine gravel, some coarse to fine sand, little silt, trace cinders, dense, saturated, possible cobbles and boulders GM -FILL- Cinders and wood fragments at 26.0'
-17.5	27.6	Black coarse to fine sand and silt, little coarse to fine gravel, dense, saturated SM -FILL-
-19.1	29.2	Gray silty clay, trace coarse to fine sand, soft, medium plasticity, wet CL
-19.9	30.0	End of Boring at 30.0'.

SAMPLE TYPE & NO.	DEPTH (FT)	RECOVERY (IN)	BLOW COUNTS	Water Content	NOTES & TEST RESULTS
SS-11	20.0-22.0	4"R	2 7 12 5	21.4	PID=7.0ppm Auger grinding
SS-12	22.0-22.5	6"R	85/6"	23.2	PID=6.8ppm Auger grinding. Removed auger, replaced auger teeth. Continued drilling. Auger grinding on boulder.
SS-13	24.0-26.0	14"R	13 22 10 11	14.1	
SS-14	26.0-27.4	13"R	18 29 50/5"	11.7	PID=2.4ppm PID=5.5ppm
SS-15A/B	28.0-30.0	20"R	18 11 3 4	8.5, 24.9	SS-15A: PID=5.9ppm SS-15B: PID=6.1ppm qu**=0.7tsf

DRILLING CONTRACTOR Patrick Drilling; DRILLING METHOD 4 1/4" I.D. HSA; DRILLING EQUIPMENT CME 75 ATV; DRILLING STARTED 4/4/97 ENDED 4/4/97
REMARKS: Piezometer P-3-97 constructed in completed borehole. See installation
WATER LEVEL (ft.): ▽ 11.1' during drilling; ▼ 10.6' imm. after drilling; ▼ 10.2 4/18/97

PATRICK ENGINEERING INC. — BORING NUMBER B-4-97 — SHEET 1 OF 2

CLIENT: Illinois Department of Natural Resources
PROJECT & NO.: Lake Michigan Leakage Control - L6091.A0-2
LOCATION: US North Pier, See boring location plan, 94 Streeter Dr., Chicago, IL N 1,903,051.4 E 697,001.7
LOGGED BY: PJC
GROUND ELEVATION: 9.9

ELEVATION	DEPTH (FT)	SOIL/ROCK DESCRIPTION
9.9	0.0	Gray coarse to fine gravel, little coarse to fine sand, little silt, moist IDOT CA-6 GM -FILL-
7.4	2.5	Black silty clay, trace cinders, little coarse to fine sand, trace fine gravel, medium stiff, medium plasticity, moist CL -FILL-
4.9	5.0	Gray silty clay, little coarse to fine sand, trace medium to fine gravel, stiff, low plasticity, moist CL Brown saturated coarse to fine sand 6.4' - 6.6' -FILL-
3.3	6.6	Apparent 3.0' thick concrete slab from 6.6' to 9.6' Fragments of concrete slab inside augers. Coarse to fine gravelin cuttings. -FILL-
0.3 / 0.2	9.6 / 9.7	▽ Black and white coarse to fine gravel with apparent cobbles, little coarse to fine sand, little silt, trace cinders, dense, saturated GM -FILL- Little clayey silt in sample at 17.5' Some black and brown coarse to fine sand and silt at 18.0'
-9.6	19.5	

SAMPLE TYPE & NO.	DEPTH (FT)	RECOVERY (IN)	BLOW COUNTS	Water Content	NOTES & TEST RESULTS
AU-1	0.0-2.0			4.2	PID=Photo-ionization device results in parts per million (ppm) AU-1: PID=6.5ppm
SS-2	2.0-4.0	10"R	3 4 5 5	15.3	Auger grinding at 3.0'.
SS-3	4.0-6.0	18"R	4 2 3 4	19.6	PID=7.1ppm PID=5.3ppm
SS-4	6.0-6.7	6"R	2 50+/2"	17.7	PID=6.2ppm Auger grinding
SS-5	8.0	0"R	50+/0"		No recovery possible, concrete footing.
SS-6	10.0-10.2	2"R	50+/3"	19.2	PID=6.8ppm Auger grinding
SS-7	12.0-14.0	10"R	9 10 12 10	15.2	PID=7.1ppm
SS-8	14.0-16.0	12"R	12 10 8 8	9.8	PID=6.9ppm Auger grinding
SS-9	16.0-18.0	13"R	5 4 6 6	14.5	PID=7.2ppm
SS-10	18.0-20.0	12"R	5 11 10	15.1	PID=6.5ppm

DRILLING CONTRACTOR Patrick Drilling; DRILLING METHOD 4 1/4" I.D. HSA; DRILLING EQUIPMENT CME 75 ATV; DRILLING STARTED 4/7/97 ENDED 4/7/97
REMARKS: Piezometer P-4-97 constructed in completed borehole. See installation
WATER LEVEL (ft.): ▽ 10.0' during drilling; ▼ 10.5' imm. after drilling; ▼ 9.7 4/18/97

PATRICK ENGINEERING INC. — BORING NUMBER B-4-97 — SHEET 2 OF 2

CLIENT: Illinois Department of Natural Resources
PROJECT & NO.: Lake Michigan Leakage Control - L6091.A0-2
LOCATION: US North Pier, See boring location plan, 94 Streeter Dr., Chicago, IL N 1,903,051.4 E 697,001.7
LOGGED BY: PJC
GROUND ELEVATION: 9.9

ELEVATION	DEPTH (FT)	SOIL/ROCK DESCRIPTION
-9.6	19.5	Black coarse to fine sand and silty clay, trace coarse to fine gravel, trace cinders, possible cobbles, dense, saturated SM -FILL- Limestone chips in sample at 30.7' Parts of timber in sample at 32.1'
-22.6	32.5	Brown and gray silty clay, little coarse to fine sand, soft, low plasticity, moist to wet CL
-24.1	34.0	End of Boring at 34.0'.

SAMPLE TYPE & NO.	DEPTH (FT)	RECOVERY (IN)	BLOW COUNTS	Water Content	NOTES & TEST RESULTS
			7		
SS-11	20.0-22.0	10"R	4 4 10 10	19.0	PID=4.1ppm
SS-12	22.0-24.0	13"R	5 4 6 7	24.9	PID=2.3ppm
SS-13	24.0-26.0	10"R	5 5 2 2	22.3	PID=3.2ppm
SS-14	26.0-28.0	12"R	11 7 5 7	12.1	PID=2.7ppm
SS-15	28.0-30.0	14"R	17 16 15 19	27.9	PID=2.5ppm Possible boulder or cobbles, auger grinding
SS-16	30.0-30.8	8"R	9 50/3"	57.6	PID=2.9ppm
SS-17	32.0-34.0	19"R	19 2 3 4	15.2	PID=3.4ppm qu**=0.5tsf

DRILLING CONTRACTOR Patrick Drilling; DRILLING METHOD 4 1/4" I.D. HSA; DRILLING EQUIPMENT CME 75 ATV; DRILLING STARTED 4/7/97 ENDED 4/7/97
REMARKS: Piezometer P-4-97 constructed in completed borehole. See installation
WATER LEVEL (ft.): ▽ 10.0' during drilling; ▼ 10.5' imm. after drilling; ▼ 9.7 4/18/97

PATRICK ENGINEERING INC. — BORING NUMBER B-5-97 — SHEET 1 OF 2

CLIENT: Illinois Department of Natural Resources
PROJECT & NO.: Lake Michigan Leakage Control - L6091.A0-2
LOCATION: US North Pier, See boring location plan, 94 Streeter Dr., Chicago, IL N 1,903,052.3 E 696,815.8
LOGGED BY: PJC
GROUND ELEVATION: 10.1

ELEVATION	DEPTH (FT)	SOIL/ROCK DESCRIPTION
10.1	0.0	Gray coarse to fine gravel, some coarse to fine sand, little black silty clay, trace cinders, moist GC -FILL-
8.1	2.0	Gray and brown silty clay, trace coarse to fine sand, stiff, medium to low plasticity, moist CL -FILL- Little brick fragments in sample at 5.0'.
3.6	6.5	Apparent 4.8' thick concrete slab from 6.5' to 11.3'. Fragments of concrete slab inside augers. Coarse to fine gravelin cuttings -FILL-
0.0	10.1	▽
-1.2	11.3	Gray coarse to fine gravel, little coarse to fine sand, little silt, trace cinders, possible cobbles, dense, saturated GM -FILL-
-8.4	18.5	Black clayey silt to silt, little coarse to fine sand, little coarse to fine gravel, dense, saturated CL-ML -FILL-
-11.5	21.6	

SAMPLE TYPE & NO.	DEPTH (FT)	RECOVERY (IN)	BLOW COUNTS	Water Content	NOTES & TEST RESULTS
AU-1	0.0-2.0			8.6	PID=Photo-ionization device results in parts per million (ppm) AU-1: PID=3.1ppm
SS-2	2.0-4.0	16"R	21 3 5 4	15.8	PID=4.7ppm
SS-3	4.0-6.0	14"R	2 3 4 3	15.0	Auger grinding PID=5.7ppm
SS-4	6.0-6.5	0"R	1 50/0"	17.7	PID=5.6ppm qu**=1.3tsf Spoon refusal Auger grinding
SS-5	8.0	0"R	50/0"		
SS-6	10.0	0"R	50/0"		
SS-7	12.0-14.0	15"R	22 25 6 5	9.8	PID=7.9ppm
SS-8	14.0-16.0	9"R	7 10 7 4	21.4	PID=7.5ppm
SS-9	16.0-18.0	12"R	7 10 13 10	8.7	PID=7.2ppm
SS-10	18.0-20.0	12"R	15 13 2 9	11.8	PID=6.9ppm
SS-11	20.0-22.0	14"R	13 14 7	7.0	PID=9.4ppm

DRILLING CONTRACTOR Patrick Drilling; DRILLING METHOD 4 1/4" I.D. HSA; DRILLING EQUIPMENT CME 75 ATV; DRILLING STARTED 4/15/97 ENDED 4/15/97
REMARKS: Piezometer P-5-97 constructed in completed borehole. See installation
WATER LEVEL (ft.): ▽ 11.3' during drilling; ▼ 10.0' after drilling; ▼ 10.1 4/18/97

PATRICK ENGINEERING INC. — BORING NUMBER B-5-97 — SHEET 2 OF 2

CLIENT: Illinois Department of Natural Resources
PROJECT & NO.: Lake Michigan Leakage Control - L6091.A0-2
LOCATION: US North Pier, See boring location plan, 94 Streeter Dr., Chicago, IL N 1,903,052.3 E 696,815.8
LOGGED BY: PJC
GROUND ELEVATION: 10.1

ELEVATION	DEPTH (FT)	SOIL/ROCK DESCRIPTION
-11.5	21.6	Black coarse to fine gravel, little coarse to fine sand, trace silt, dense, saturated GC -FILL-
-13.3	23.4	Black clayey silt to silt, little coarse to fine sand, trace coarse to fine gravel, dense, saturated CL-ML -FILL- No gravelin sample at 28.0'
-19.7	29.8	Black medium to fine sand, little silt, timber fragments, loose, saturated SM
-21.2	31.3	-FILL- Timber fragments in sample at 30.0'.
-23.0	33.1	Black and brown coarse to fine sand, dense, saturated Limestone chips in sample SM -FILL- Gray silty clay, trace coarse to fine sand, soft, medium to low plasticity, wet CL
-25.9	36.0	End of Boring at 36.0'.

SAMPLE TYPE & NO.	DEPTH (FT)	RECOVERY (IN)	BLOW COUNTS	Water Content	NOTES & TEST RESULTS
			8		
SS-12	22.0-24.0	10"R	4 6 8 7	8.8	PID=9.5ppm
SS-13	24.0-26.0	11"R	10 8 11 11	8.0	PID=9.1ppm
SS-14	26.0-28.0	14"R	1 8 10 9	44.3	PID=10.0ppm
SS-15	28.0-30.0	19"R	9 8 3 3	24.8	PID=9.1ppm
SS-16	30.0-30.7	8"R	2 50/2"	28.0	PID=8.1ppm
SS-17	32.0-32.2	3"R	50/3"	20.0	Possible boulder, auger grinding. PID=10.4ppm
SS-18	34.0-36.0	24"R	2 2 2 4	25.3	PID=7.5ppm qu**=0.6tsf

DRILLING CONTRACTOR Patrick Drilling; DRILLING METHOD 4 1/4" I.D. HSA; DRILLING EQUIPMENT CME 75 ATV; DRILLING STARTED 4/15/97 ENDED 4/15/97
REMARKS: Piezometer P-5-97 constructed in completed borehole. See installation
WATER LEVEL (ft.): ▽ 11.3' during drilling; ▼ 10.0' after drilling; ▼ 10.1 4/18/97

PATRICK ENGINEERING INC. — BORING NUMBER B-1-96 — SHEET 1 OF 1

CLIENT: Illinois Department of Natural Resources
PROJECT & NO.: Lake Michigan Leakage Control - L6091.A0-2
LOCATION: US North Pier, See boring location plan, 94 Streeter Dr., Chicago, IL N 1,903,056.6 E 696,729.2
LOGGED BY: PJC
GROUND ELEVATION: 10.1

ELEVATION	DEPTH (FT)	SOIL/ROCK DESCRIPTION	NOTES & TEST RESULTS
10.1	0.0		Blind drilled to 31.5'. See boring log CBB-1-86 for soil conditions in the vicinity.
-0.1	10.2	▽ Soil cuttings 0.0' - 31.5': Brown, gray and black silty clay, with coarse to fine sand, coarse to fine gravel, cinders, rubble, wood, low plasticity, wet CL -FILL-	Auger grinding on possible concrete from 7.5' to 10.5'.
-21.4	31.5		Piezometer P-1D-96 installed in borehole. See installation report for more details. Piezometer P-1S-96 installed in offset borehole approximately 5.0' west. Offset borehole encountered

DRILLING CONTRACTOR Patrick Drilling; DRILLING METHOD 4 1/4" I.D. HSA; DRILLING EQUIPMENT CME 55 ATV; DRILLING STARTED 12/13/96 ENDED 12/13/96
REMARKS: Piezometer P-1D-96 constructed in completed borehole. See installation
WATER LEVEL (ft.): ▽ 12.0' during drilling; ▼ 10.2' 1/14/97; ▼ 10.2 4/15/97

PATRICK ENGINEERING INC. — BORING NUMBER B-2-96 — SHEET 1 OF 2

CLIENT: Illinois Department of Natural Resources
PROJECT & NO.: Lake Michigan Leakage Control - L6091.A0-2
LOCATION: US North Pier, See boring location plan, 94 Streeter Dr., Chicago, IL N 1,903,052.2 E 696,882.1
LOGGED BY: PJC
GROUND ELEVATION: 10.2

ELEVATION	DEPTH (FT)	SOIL/ROCK DESCRIPTION
10.2	0.0	Black silty clay, IDOT CA-7 from 3" to 10" CL -FILL-
9.2	1.0	Black silty clay, some coarse to fine sand, little medium to fine gravel, stiff, moist CL -FILL-
6.9	3.3	Black and brown silty clay, little coarse to fine sand, trace coarse to fine gravel, soft to medium stiff, medium plasticity, moist to wet CL -FILL-
3.2	7.0	Apparent 3' thick concrete slab from 7.0' to 10.0' Fragments of concrete slab inside augers Coarse to fine gravelin cuttings -FILL-
0.2 / 0.1	10.0 / 10.1	▽ White coarse to fine gravel, little coarse to fine sand, little silt, dense, saturated GM -FILL-
-2.5	12.7	Dark gray coarse to fine gravel with apparent cobbles, some coarse to fine sand, some silty clay, little cinders, medium dense, saturated GC -FILL-

SAMPLE TYPE & NO.	DEPTH (FT)	RECOVERY (IN)	BLOW COUNTS	Water Content	NOTES & TEST RESULTS
AU-1	0.0-1.0			11.3	PID=Photo-ionization device results in parts per million (ppm). AU-1: PID=3.2ppm
SS-2	1.0-3.0	7"R	5 4 5 5	12.0	SS-2: PID=2.6ppm
SS-3	3.0-5.0	0"R	8 11 6 5	13.5	No recovery in SS-3 Took auger sample AU-3: PID=2.1ppm
SS-4	5.0-7.0	18"R	5 6 4 3	22.8	Auger grinding SS-4: PID=1.9ppm
SS-5	7.0-7.1	0"R	50/1"		Spoon refusal on apparent concrete. Auger grinding through 3' concrete slab
SS-6	10.0-11.0		17 11	5.5	SS-6: 4" Recovery PID=1.9ppm
SS-7	11.0-13.0	16"R	4 16 14 7	23.1	Auger grinding SS-7: PID=2.0ppm
SS-8	13.0-15.0	17"R	10 11 5 14	34.6	Auger grinding PID=4.2ppm
SS-9	15.0-17.0	0"R	W O R	62.1	Auger grinding 15.0' - 17.0'
SS-10	17.0-19.0	24"R	11 17 5 16		PID=5.1ppm Gravel = 43% Sand = 28% Fines = 29%

DRILLING CONTRACTOR Patrick Drilling; DRILLING METHOD 4 1/4" I.D. HSA; DRILLING EQUIPMENT CME 55 TM; DRILLING STARTED 12/19/96 ENDED 12/19/96
REMARKS: Piezometer P-2-96 constructed in completed borehole. See installation
WATER LEVEL (ft.): ▽ 10.0' during drilling; ▼ 10.2' 1/14/97; ▼ 10.1 4/15/97

PATRICK ENGINEERING INC. — BORING NUMBER B-2-96 — SHEET 2 OF 2

CLIENT: Illinois Department of Natural Resources
PROJECT & NO.: Lake Michigan Leakage Control - L6091.A0-2
LOCATION: US North Pier, See boring location plan, 94 Streeter Dr., Chicago, IL N 1,903,052.2 E 696,882.1
LOGGED BY: PJC
GROUND ELEVATION: 10.2

ELEVATION	DEPTH (FT)	SOIL/ROCK DESCRIPTION
-8.8	19.0	Dark gray coarse to fine gravel with apparent cobbles, some coarse to fine sand, some silty clay, little cinders, medium dense, saturated GC -FILL-
-10.4	20.6	Dark gray coarse to fine sand, some coarse to fine gravel, some clayey silt, medium dense to dense, saturated SM -FILL-
-16.8	27.0	Apparent wood -FILL-
-18.8	29.0	Gray silty clay, trace to little coarse to fine sand, soft, medium plasticity, wet CL
-22.5	32.7	End of Boring at 32.7'.

SAMPLE TYPE & NO.	DEPTH (FT)	RECOVERY (IN)	BLOW COUNTS	Water Content	NOTES & TEST RESULTS
SS-11A/B	19.0-21.0	20"R	9 3 9 26	29.9, 19.7	SS-11A: PID=2.9ppm SS-11B: PID=3.3ppm
SS-12	21.0-21.3	2"R	50/4"	35.3	Auger grinding SS-12: PID=4.8ppm
SS-13	23.0-25.0	14"R	10 13 14 16	32.6	Auger grinding at 23.2' SS-13: PID=2.4ppm Gravel = 31% Sand = 47% Fines = 22%
SS-14	25.0-27.0	16"R	15 13 27 19	13.8	SS-14: PID=2.4ppm
SS-15	27.0-27.4	0"R	50/5"	19.6	Auger grinding through interval 27.0' - 29.0'. Augers became out of plumb after encountering possible wood. Wood in cuttings
SS-16	29.0-31.0	18"R	10 12 8 9		SS-16: PID=6.3ppm

DRILLING CONTRACTOR Patrick Drilling; DRILLING METHOD 4 1/4" I.D. HSA; DRILLING EQUIPMENT CME 55 TM; DRILLING STARTED 12/19/96 ENDED 12/19/96
REMARKS: Piezometer P-2-96 constructed in completed borehole. See installation
WATER LEVEL (ft.): ▽ 10.0' during drilling; ▼ 10.2' 1/14/97; ▼ 10.1 4/15/97