



November 16, 2001

Mr. Mark Prieksat
Remedial Project Manager
Directorate of Public Works
Environmental Resources Department
Fort Richardson, AK 99505-6500

Letter Report
Limited PCB Investigation
Roosevelt Road Transmitter Site
URS Project No. 74-37174179.10

Dear Mr. Prieksat:

URS Corporation (URS) is pleased to submit this letter report presenting the results of our limited PCB (polychlorinated biphenyls) investigation at the Roosevelt Road Transmitter Site (RRTS). This project was performed in support of the realignment of the Alaska Railroad Corporation (ARRC) proposed and existing Rights-of-Way (ROW) through Elmendorf Air Force Base (EAFB) and Fort Richardson Army Post (Fort Richardson), Alaska. The purpose of the limited subsurface investigation was to identify potential subsurface contaminants prior to their disturbance by excavation.

BACKGROUND

RRTS is part of OU-A, and is located to the east of Otter Lake on Roosevelt Road. RRTS includes the foundation of a former above ground structure, and an underground communications bunker. The proposed ARRC ROW transects 250 feet into the northern portion of RRTS; however, the proposed ROW does not pass through any of the active portions of the facility, which are approximately 500 feet south of the proposed ROW.

PCB and petroleum hydrocarbon contaminated soil has been previously documented at the RRTS. A summary of previous environmental information for RRTS is presented in Section 2 of the Environmental Project Management Plan for the Alaska Railroad Corporation Track Realignment Project – Military Segment dated April 2001. Given that a significant amount of excavation at the RRTS is planned as part of the railway realignment, this limited subsurface soil investigation was conducted prior to the planned excavation activities to identify potential contaminants prior to their disturbance.

URS Corporation
2700 Gambell St., Suite 200
Anchorage, AK 99503
Tel: 907.562.3366
Fax: 907.562.1297



Mr. Mark Prieksat
November 16, 2001
Page 3

corresponds to a potential PCB concentration of between 1.0 and 4.0 ppm. The final sample had a detector reading of 58, which corresponds to a potential PCB concentration of between 4.1 and 15 ppm.

PID readings for the 72 samples ranged from 0.2 parts per million vapor (ppmv) to 6.6 ppmv, with the highest reading detected in Boring B-1 at a depth of 2 feet bgs.

Analytical Results: Analytical results for soil samples are summarized in Table 2 (attached). A copy of the analytical data package received from the laboratory is attached to this letter report. With the exception of the a concentration of 10.5 milligrams per kilograms (mg/kg) of diesel range organics (DRO) in sample number B-1/12, no detectable concentrations of any analytes were reported for the eight soil samples tested.

CONCLUSIONS

Based on the results of the limited investigation, no detectable concentrations of PCBs appear to be present within the area proposed for excavation at the RRTS. In addition, the concentration DRO detected in boring B-1 is well below the associated Alaska Department of Environmental Conservation (ADEC) cleanup level.

If you have any questions or require additional information please contact us at your earliest convenience.

Sincerely,

URS Corporation

Brian F. Koval
Project Manager

cc: Bob Hanson, Alaska Railroad
Ted Trueblood, Tryck Nyman Hayes, Inc.

Attachments:

- Attachment A - Tables
- Attachment B - Figures
- Attachment C - Laboratory Data Package
- Attachment D - Boring Logs

PROCEDURES

Soil Boring Installation Four soil borings were drilled between October 22 and 24, 2001 at the RRTS by Discovery Drilling using a CME 55 track-mounted drill rig. The locations for the soil borings were selected along the southern edge of the proposed ROW based on available information from previous studies to ensure that the excavation area is adequately characterized and were mutually agreed upon by ARRC and Fort Richardson.

The soil borings were advanced to approximately 50 feet below ground surface (bgs) at the locations shown on the attached Figure 1. Groundwater was not encountered in any of the borings. Soil cuttings were contained in geo-membrane super sacks in the vicinity of the borehole, pending field screening results. After sampling was complete, each borehole was secured but remained open until laboratory results were received. Given that no contaminants were encountered as a result of the investigation, the soil cuttings were placed back into their respective borings.

Soil Sample Field Screening: In each borehole, a split-spoon sampler was used to collect soil samples every 2.5 feet for lithologic characterization, field screening, and potential laboratory analysis. Upon retrieval from the borehole the sampler was opened, and soil screened for petroleum hydrocarbons using a direct-reading photoionization detector (PID), and for PCBs using field test kits designed specifically for detecting PCBs. The URS geologist on site maintained a log of each exploratory boring. The logs include a description of materials encountered in accordance with the Unified Soil Classification System, sampling information, and any other pertinent observations made during drilling. The boring logs are attached to this report.

Soil Sampling and Analysis: Soil samples were collected for laboratory analysis from each boring at the depths with the two highest field screening results for PCBs. Samples for laboratory analysis were placed in clean laboratory-provided containers, labeled, stored in a cooler, and delivered to CT&E Environmental Services Inc. in Anchorage for analysis. The samples were analyzed for DRO by AK 102, and PCBs by EPA Method 8082.

RESULTS

Results of Field Screening: Field PID and PCB screening was conducted on 72 soil samples during drilling of exploratory borings. The results of the PCB and hydrocarbon field screenings are presented in the attached Table 1, and are summarized below.

Sixty seven of the samples screened for PCBs had detector readings of 10 or less, which corresponds to a potential PCB concentration of less than 0.5 parts per million (ppm). Two of the samples had detector readings of between 10 and 20, which corresponds to a potential PCB concentration of between 0.5 and 1.0 ppm. Two of the samples had detector readings of between 21 and 40, which

ATTACHMENT A

TABLES

Table 1
Soil Screening Sample Results
Roosevelt Road Transmitter Site
Fort Richardson Army Post, Alaska

Sample Number	Sample Depth (ft)	PCB Field Screening Result	Potential PCB Equivalents (ppm)	PID Reading (ppmv)
B-1				
1	3	1	<0.5	2.1
2	6.5	1	<0.5	6.6
3	59	1	<0.5	1.0
4	11.5	1	<0.5	0.5
5	14	1	<0.5	0.5
6	16.5	1	<0.5	0.8
7	19	1	<0.5	2.0
8	21.5	18	0.5 - 1.0	0.7
9	24	1	<0.5	2.0
10	26	1	<0.5	1.1
11	28.5	1	<0.5	0.4
12*	31	58	>70	0.2
13	33.5	1	<0.5	0.2
14	35.5	1	<0.5	0.1
15	40.5	1	<0.5	0.1
16*	44	38	1.1 - 4.0	0.4
17	45.5	1	<0.5	0.2
18	49	1	<0.5	1.3
19	50	1	<0.5	Not collected
B-2				
1	4	1	<0.5	0.8
2	6.5	3	<0.5	0.5
3*	9	9	<0.5	0.2
4	11.5	1	<0.5	0.7
5	16.5	1	<0.5	0.8
6	19	1	<0.5	1.1
7	21.5	2	<0.5	0.4
8*	25	7	<0.5	Not collected
9	28	1	<0.5	0.5
10	31	1	<0.5	1.3
11	33	1	<0.5	0.5
12	35.5	1	<0.5	1.0
13	38.5	1	<0.5	1.1
14	44	1	<0.5	0.0
15	46.5	1	<0.5	0.8
16	51	1	<0.5	1.0

Notes: * = Sent to laboratory for analytical testing.
 < = Less than
 > = Greater than
 PPM = Parts per million.
 PPMV = Parts per million vapor.
 PCBs = Polychlorinated Biphenyls by EPA 846-8082.

**Table 1 (cont.)
Soil Screening Sample Results
Roosevelt Road Transmitter Site
Fort Richardson Army Post, Alaska**

Sample Number	Sample Depth (ft)	PCB Field Screening Result	Potential PCB Equivalentents (ppm)	PID Reading (ppmv)
B-3				
1	4	1	<0.5	3.6
2	6.5	1	<0.5	1.7
3*	9	1	<0.5	0.7
4	11.5	1	<0.5	1.1
5	14	1	<0.5	1.5
6	16.5	1	<0.5	1.4
7	19	1	<0.5	0.8
8	21.5	1	<0.5	1.5
9	24	1	<0.5	0.8
10	26	1	<0.5	0.5
11	27.5	1	<0.5	1.1
12	30	1	<0.5	0.7
13	35	1	<0.5	0.9
14	37.5	1	<0.5	0.7
15	40	1	<0.5	1.1
16*	44	2	<0.5	0.8
17	46.5	1	<0.5	1.0
18	48.5	1	<0.5	0.7
19	51.5	1	<0.5	0.8
B-4				
1	4	1	<0.5	0.7
2	6.5	1	<0.5	0.1
3	9	1	<0.5	0.5
4	11.5	1	<0.5	0.7
5	14	1	<0.5	0.9
6*	16.5	13	0.5 - 1.0	1.1
7	19	1	<0.5	1.2
8	21.5	1	<0.5	1.4
9	24	1	<0.5	1.4
10	26.5	1	<0.5	1.2
11	28	1	<0.5	0.7
12	31.5	1	<0.5	1.0
13*	34	24	1.1 - 4.0	1.7
14	35	1	<0.5	2.7
15	41.5	1	<0.5	1.0
16	44	1	<0.5	0.4
17	46.5	2	<0.5	1.6
18	48	1	<0.5	1.3

Notes: * = Sent to laboratory for analytical testing.
 < = Less than
 > = Greater than
 PPM = Parts per million.
 PPMV = Parts per million vapor.
 PCBs = Polychlorinated Biphenyls by EPA 846-8082.

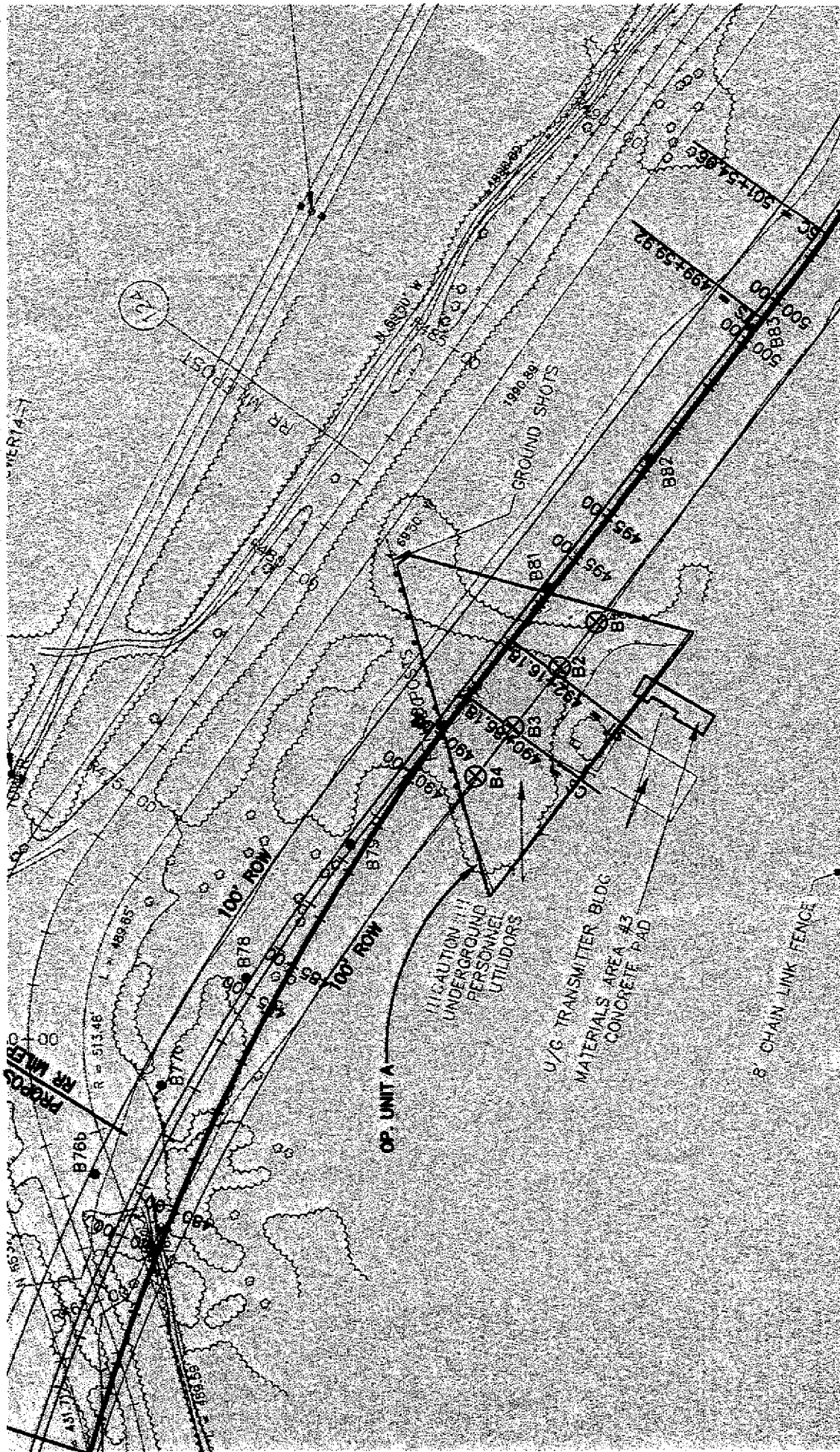
Table 2
Soil Sample Analytical Results
Roosevelt Road Transmitter Site
Fort Richardson Army Post, Alaska

Boring Number	Sample Depth	Sample Number	Result(mg/kg)	
			DRO	PBCs
B-1	31	B-1/12	10.5	ND
	44	B-1/16	ND	ND
	44	B-1/16 Dup-1	ND	ND
B-2	9	B-2/3	ND	ND
	25	B-2/8	ND	ND
B-3	9	B-3/3	ND	ND
	44	B-3/16	ND	ND
B-4	16.5	B-4/6	ND	ND
	34	B-4/13	ND	ND

Notes: DRO = diesel range organics by AK 102.
mg/kg = milligrams per kilogram
PCBs = polychlorinated biphenyls by EPA 846-8082.
ND = not detected.

ATTACHMENT B

FIGURES



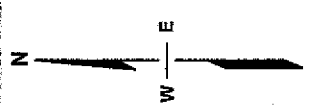
ALASKA RAILROAD CORPORATION
 ANCHORAGE-EAGLE RIVER LINE CHANGE

URS

SOIL BORING LOCATION
 ROSEVELT ROAD TRANSMITTER SITE
 FORT RICHARDSON ARMY POST
 ANCHORAGE, ALASKA

JOB NO: 74-37174-175.10
 DATE: 11/19/01

DRAWN: ARN
 FILE: BORINGLOC52.DWG



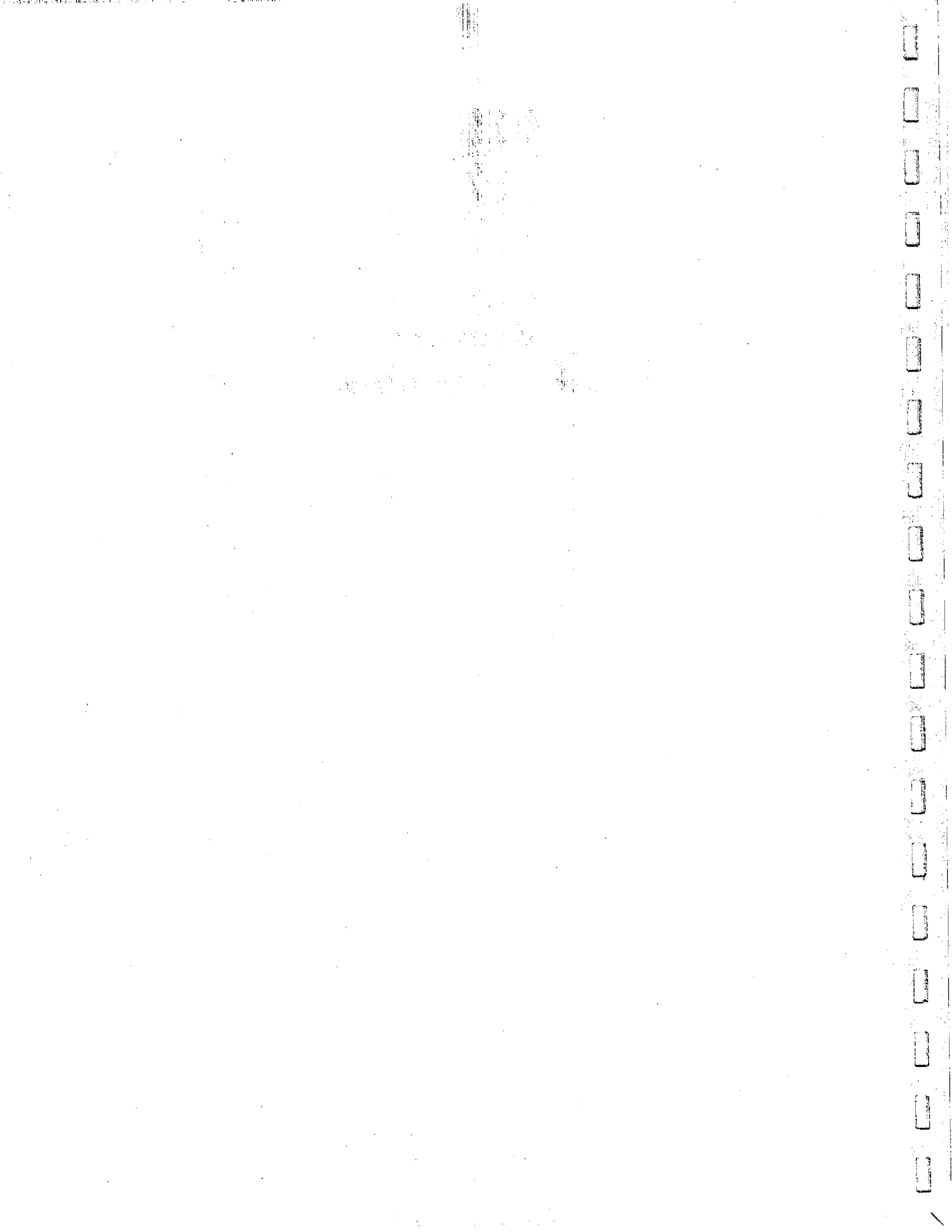
NOT TO SCALE

LEGEND
 ⊗ EXPLORATORY BORING LOCATIONS
 B1

FIGURE 1

ATTACHMENT C

LABORATORY DATA PACKAGE




CT&E Environmental Services Inc.
Laboratory Division
Laboratory Analysis Report

200 W. Potter Drive
 Anchorage, AK 99518-1605
 Tel: (907) 562-2343
 Fax: (907) 561-5301
 Web: <http://www.cteesi.com>

Mike Shelton
 URS Corporation
 2700 Gambell First Floor
 Anchorage, AK 99503

Work Order: 1017492
 ARRC Roosevelt 74-37174179.10

Client: URS Corporation

Report Date: November 02, 2001

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by CT&E. A copy of our Quality Control Manual that outlines this program is available at your request.

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth in our Quality Assurance Program Plan.

If you have any questions regarding this report or if we can be of any other assistance, please call your CT&E Project Manager at (907) 562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

- U Indicates the analyte was analyzed for but not detected.
- F Indicates an estimated value that falls below PQL, but is greater than the MDL.
- B Indicates the analyte is found in the blank associated with the sample.
- * The analyte has exceeded allowable limits.
- GT Greater Than
- D Secondary Dilution
- LT Less Than
- ! Surrogate out of range



Member of the SGS Group (Societe Generale de Surveillance)

200 W. Potter Drive, Anchorage, AK 99518-1605 — Tel: (907) 562-2343 Fax: (907) 561-5301
 3180 Peger Road, Fairbanks, AK 99709-5471 — Tel: (907) 474-8656 Fax: (907) 474-9685

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CT&E Environmental Services Inc.

CT&E Ref# 1017492001
 Client Name URS Corporation
 Project Name/# ARRC Roosevelt 74-37174179.10
 Client Sample ID B-1/12
 Matrix Soil/Solid
 Ordered By

Client PO# AN10283
 Printed Date/Time 11/02/2001 9:26
 Collected Date/Time 10/22/2001 11:55
 Received Date/Time 10/25/2001 14:05
 Technical Director Stephen C. Ede

Released By *Shawn Paster*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	95.0		%	SM20 2540G			10/30/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	10.5 U	10.5	mg/Kg	AK102 DRO		10/29/01	10/30/01	DS
Surrogates								
5a Androstane <sum>	77.6		%	AK102 DRO	50-150	10/29/01	10/30/01	DS
Semivolatile Organic Gas Chromatography								
Aroclor-1016	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1221	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1232	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1242	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1248	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1254	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1260	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Surrogates								
Decachlorobiphenyl <Sum>	95.1		%	SW846-8082	36-125	10/29/01	10/30/01	WAA



CT&E Environmental Services Inc.

CT&E Ref# 1017492002
 Client Name URS Corporation
 Project Name/# ARRC Roosevelt 74-37174179.10
 Client Sample ID B-1/16
 Matrix Soil/Solid
 Ordered By

Client PO# AN10283
 Printed Date/Time 11/02/2001 9:26
 Collected Date/Time 10/22/2001 13:20
 Received Date/Time 10/25/2001 14:05
 Technical Director Stephen C. Ede

Released By *Sharon Proton*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	94.7		%	SM20 2540G			10/30/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	10.4 U	10.4	mg/Kg	AK102 DRO		10/29/01	10/30/01	DS
Surrogates								
5a Androstane <sur>	90.8		%	AK102 DRO	50-150	10/29/01	10/30/01	DS
Semivolatile Organic Gas Chromatography								
Aroclor-1016	0.0319 U	0.0319	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1221	0.0319 U	0.0319	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1232	0.0319 U	0.0319	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1242	0.0319 U	0.0319	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1248	0.0319 U	0.0319	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1254	0.0319 U	0.0319	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1260	0.0319 U	0.0319	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Surrogates								
Decachlorobiphenyl <SUR>	95.8		%	SW846-8082	36-125	10/29/01	10/30/01	WAA



CT&E Environmental Services Inc.

CT&E Ref.# 1017492004
 Client Name URS Corporation
 Project Name/# ARRC Roosevelt 74-37174179.10
 Client Sample ID B-2/3
 Matrix Soil/Solid
 Ordered By

Client PO# AN10283
 Printed Date/Time 11/02/2001 9:26
 Collected Date/Time 10/23/2001 9:30
 Received Date/Time 10/25/2001 14:05
 Technical Director Stephen C. Ede

Released By *Shane Pector*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	97.2		%	SM20 2540G			10/30/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	10.2 U	10.2	mg/Kg	AK102 DRO		10/29/01	10/30/01	DS
Surrogates								
5a Androstane <sum>	68.3		%	AK102 DRO	50-150	10/29/01	10/30/01	DS
Semivolatile Organic Gas Chromatography								
Aroclor-1016	0.0315 U	0.0315	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1221	0.0315 U	0.0315	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1232	0.0315 U	0.0315	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1242	0.0315 U	0.0315	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1248	0.0315 U	0.0315	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1254	0.0315 U	0.0315	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1260	0.0315 U	0.0315	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Surrogates								
Decachlorobiphenyl <Sun>	97.9		%	SW846-8082	36-125	10/29/01	10/30/01	WAA



CT&E Environmental Services Inc.

CT&E Ref.# 1017492005
 Client Name URS Corporation
 Project Name/# ARRC Roosevelt 74-37174179.10
 Client Sample ID B-2/8
 Matrix Soil/Solid
 Ordered By

Client PO# AN10283
 Printed Date/Time 11/02/2001 9:26
 Collected Date/Time 10/23/2001 10:30
 Received Date/Time 10/25/2001 14:05
 Technical Director Stephen C. Ede

Released By *Shane Pester*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	96.5		%	SM20 2540G			10/30/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	10.8 U	10.8	mg/Kg	AK102 DRO		10/29/01	10/30/01	DS
Surrogates								
5a Androstane <sur>	76.3		%	AK102 DRO	50-150	10/29/01	10/30/01	DS
Semivolatile Organic Gas Chromatography								
Aroclor-1016	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1221	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1232	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1242	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1248	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1254	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1260	0.0312 U	0.0312	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Surrogates								
Decachlorobiphenyl <Sur>	104		%	SW846-8082	36-125	10/29/01	10/30/01	WAA



CT&E Environmental Services Inc.

CT&E Ref.# 1017492006
 Client Name URS Corporation
 Project Name# ARRC Roosevelt 74-37174179.10
 Client Sample ID B-3/3
 Matrix Soil/Solid
 Ordered By

Client PO# AN10283
 Printed Date/Time 11/02/2001 9:26
 Collected Date/Time 10/24/2001 9:35
 Received Date/Time 10/25/2001 14:05
 Technical Director Stephen C. Ede

Released By *Shawn Pactor*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	96.7		%	SM20 2540G			10/30/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	10.5 U	10.5	mg/Kg	AK102 DRO		10/29/01	10/30/01	DS
Surrogates								
5a Androstane <sur>	73.9		%	AK102 DRO	50-150	10/29/01	10/30/01	DS
Semivolatile Organic Gas Chromatography								
Aroclor-1016	0.0307 U	0.0307	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1221	0.0307 U	0.0307	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1232	0.0307 U	0.0307	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1242	0.0307 U	0.0307	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1248	0.0307 U	0.0307	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1254	0.0307 U	0.0307	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1260	0.0307 U	0.0307	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Surrogates								
Decachlorobiphenyl <Sur>	104		%	SW846-8082	36-125	10/29/01	10/30/01	WAA



CT&E Environmental Services Inc.

CT&E Ref# 1017492007
 Client Name URS Corporation
 Project Name# ARRC Roosevelt 74-37174179.10
 Client Sample ID B-3/16
 Matrix Soil/Solid
 Ordered By

Client PO# AN10283
 Printed Date/Time 11/02/2001 9:26
 Collected Date/Time 10/24/2001 11:55
 Received Date/Time 10/25/2001 14:05
 Technical Director Stephen C. Ede

Released By *Shane Patten*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	96.1		%	SM20 2540G			10/30/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	10.4 U	10.4	mg/Kg	AK102 DRO		10/29/01	10/31/01	DS
Surrogates								
5a Androstane <sum>	85.4		%	AK102 DRO	50-150	10/29/01	10/31/01	DS
Semivolatile Organic Gas Chromatography								
Aroclor-1016	0.0309 U	0.0309	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1221	0.0309 U	0.0309	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1232	0.0309 U	0.0309	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1242	0.0309 U	0.0309	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1248	0.0309 U	0.0309	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1254	0.0309 U	0.0309	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1260	0.0309 U	0.0309	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Surrogates								
Decachlorobiphenyl <Sum>	106		%	SW846-8082	36-125	10/29/01	10/30/01	WAA



CT&E Environmental Services Inc.

CT&E Ref.# 1017492008
 Client Name URS Corporation
 Project Name/# ARRC Roosevelt 74-37174179.10
 Client Sample ID B-4/6
 Matrix Soil/Solid
 Ordered By

Client PO# AN10283
 Printed Date/Time 11/02/2001 9:26
 Collected Date/Time 10/24/2001 14:50
 Received Date/Time 10/25/2001 14:05
 Technical Director Stephen C. Ede

Released By *Sharon Foster*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	89.9		%	SM20 2540G			10/30/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	11.2 U	11.2	mg/Kg	AK102 DRO		10/29/01	10/31/01	DS
Surrogates								
5a Androstane <sur>	84.3		%	AK102 DRO	50-150	10/29/01	10/31/01	DS
Semivolatile Organic Gas Chromatography								
Aroclor-1016	0.0333 U	0.0333	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1221	0.0333 U	0.0333	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1232	0.0333 U	0.0333	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1242	0.0333 U	0.0333	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1248	0.0333 U	0.0333	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1254	0.0333 U	0.0333	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1260	0.0333 U	0.0333	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Surrogates								
Decachlorobiphenyl <Sur>	102		%	SW846-8082	36-125	10/29/01	10/30/01	WAA



CT&E Environmental Services Inc.

CT&E Ref.# 1017492009
 Client Name URS Corporation
 Project Name# ARRC Roosevelt 74-37174179.10
 Client Sample ID B-4/13
 Matrix Soil/Solid
 Ordered By

Client PO# AN10283
 Printed Date/Time 11/02/2001 9:26
 Collected Date/Time 10/25/2001 10:30
 Received Date/Time 10/25/2001 14:05
 Technical Director Stephen C. Ede

Released By *Sharon Foster*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	91.7		%	SM20 2540G			10/30/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	11.0 U	11.0	mg/Kg	AK102 DRO		10/29/01	10/31/01	DS
Surrogates								
5a Androstane <sur>	81.5		%	AK102 DRO	50-150	10/29/01	10/31/01	DS
Semivolatile Organic Gas Chromatography								
Aroclor-1016	0.0326 U	0.0326	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1221	0.0326 U	0.0326	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1232	0.0326 U	0.0326	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1242	0.0326 U	0.0326	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1248	0.0326 U	0.0326	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1254	0.0326 U	0.0326	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1260	0.0326 U	0.0326	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Surrogates								
Decachlorobiphenyl <Sur>	99.9		%	SW846-8082	36-125	10/29/01	10/30/01	WAA



CT&E Environmental Services Inc.

CT&E Ref.# 1017492003
 Client Name URS Corporation
 Project Name/# ARRC Roosevelt 74-37174179.10
 Client Sample ID Dup-1
 Matrix Soil/Solid
 Ordered By

Client PO# AN10283
 Printed Date/Time 11/02/2001 9:26
 Collected Date/Time 10/22/2001 0:00
 Received Date/Time 10/25/2001 14:05
 Technical Director Stephen C. Ede

Released By *Shane Pester*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Int
Solids								
Total Solids	95.5		%	SM20 2540G			10/30/01	DMR
Semivolatile Organic Fuels Department								
Diesel Range Organics	10.5 U	10.5	mg/Kg	AK102 DRO		10/29/01	10/30/01	DS
Surrogates								
5a Androstane <sur>	83.4		%	AK102 DRO	50-150	10/29/01	10/30/01	DS
Semivolatile Organic Gas Chromatography								
Aroclor-1016	0.0316 U	0.0316	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1221	0.0316 U	0.0316	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1232	0.0316 U	0.0316	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1242	0.0316 U	0.0316	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1248	0.0316 U	0.0316	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1254	0.0316 U	0.0316	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Aroclor-1260	0.0316 U	0.0316	mg/Kg	SW846-8082		10/29/01	10/30/01	WAA
Surrogates								
Decachlorobiphenyl <Surr>	93.1		%	SW846-8082	36-125	10/29/01	10/30/01	WAA



CT&E Environmental Services Inc.

**CTE Environmental Services
Alaska Division
Level I Data Report**

Project: ARRC Roosevelt 74-37174179.10
Client: URS Corporation
CT&E Work Order: 1017492

Contents:

Chain of Custody/Sample Rec Form
Case Narrative
Final Report Pages
QC Summary Pages

Note:

Unless otherwise noted, all quality assurance/quality control criteria are in compliance with the proper regulatory authority and/or CTE's Quality Assurance Program Plan.



CT&E Environmental Services Inc.

Case Narrative

Printed Date/Time 11/2/2001 9:26

Client URSCORP URS Corporation
Workorder 1017492 ARRC Roosevelt 74-37174179.10

Sample ID Client Sample ID

401875 LCS
DRO/RRO LCS/LCSD - Surrogate/s are biased high due to interference by method required petroleum spike.

401878 LCS
DRO/RRO LCS/LCSD - Surrogate/s are biased high due to interference by method required petroleum spike.

401879 LCSD
DRO/RRO LCS/LCSD - Surrogate/s are biased high due to interference by method required petroleum spike.

1017492010 BMS
DRO/RRO MS/MSD - Surrogate/s are biased high due to interference by method required petroleum spike.

1017492011 BMSD
DRO/RRO MS/MSD - Surrogate/s are biased high due to interference by method required petroleum spike.



CT&E Environmental Services Inc.

CT&E Ref.# 401874 **Method Blank**
Client Name URS Corporation
Project Name/# ARRC Roosevelt 74-37174179.10
Matrix Soil/Solid

Printed Date/Time 11/02/2001 9:26
Prep Batch XXX 9422
Method
Date 10/29/2001

QC results affect the following production samples:

1017492001, 1017492002, 1017492003, 1017492004, 1017492005, 1017492006

Parameter	Results	PQL	Units	Analysis Date	Init
Semivolatile Organic Fuels Department					
Diesel Range Organics	10.0 U	10.0	mg/Kg	10/30/01	DS
Residual Range Organics GC	20.0 U	20.0	mg/Kg	10/30/01	DS
Batch	XFC 5261				
Method	AK102/103				
Instrument	HP 5890 Series II FID SV C F				



CT&E Environmental Services Inc.

CT&E Ref.# 401877 Method Blank
 Client Name URS Corporation
 Project Name/# ARRC Roosevelt 74-37174179.10
 Matrix Soil/Solid

Printed Date/Time 11/02/2001 9:26
 Prep Batch XXX 9423
 Method
 Date 10/29/2001

QC results affect the following production samples:
 1017492007, 1017492008, 1017492009

Parameter	Results	PQL	Units	Analysis Date	Init
Semivolatile Organic Fuels Department					
Diesel Range Organics	10.0 U	10.0	mg/Kg	10/31/01	DS
Residual Range Organics GC	20.0 U	20.0	mg/Kg	10/31/01	DS

Batch XFC 5262
 Method AK102/103
 Instrument HP 5890 Series II FID SV C F



CT&E Environmental Services Inc.

CT&E Ref.# 401880 Method Blank
 Client Name URS Corporation
 Project Name/## ARRC Roosevelt 74-37174179.10
 Matrix Soil/Solid

Printed Date/Time 11/02/2001 9:26
 Prep Batch XXX 9424
 Method
 Date 10/29/2001

QC results affect the following production samples:

1017492001, 1017492002, 1017492003, 1017492004, 1017492005, 1017492006, 1017492007, 1017492008, 1017492009

Parameter	Results	PQL	Units	Analysis Date	Init
Semivolatile Organic Gas Chromatography					
Aroclor-1016	0.0300 U	0.0300	mg/Kg	10/30/01	WAA
Aroclor-1221	0.0300 U	0.0300	mg/Kg	10/30/01	WAA
Aroclor-1232	0.0300 U	0.0300	mg/Kg	10/30/01	WAA
Aroclor-1242	0.0300 U	0.0300	mg/Kg	10/30/01	WAA
Aroclor-1248	0.0300 U	0.0300	mg/Kg	10/30/01	WAA
Aroclor-1254	0.0300 U	0.0300	mg/Kg	10/30/01	WAA
Aroclor-1260	0.0300 U	0.0300	mg/Kg	10/30/01	WAA

Batch XGC 4043
 Method SW846-8082
 Instrument HP 5890 Series II ECD SV IR



CT&E Environmental Services Inc.

CT&E Ref.# 401875 Lab Control Sample
 401876 Lab Control Sample Duplicate
 Client Name URS Corporation
 Project Name/# ARRC Roosevelt 74-37174179.10
 Matrix Soil/Solid

Printed Date/Time 11/02/2001 9:26
 Prep Batch XXX 9422
 Method
 Date 10/29/2001

QC results affect the following production samples:

1017492001, 1017492002, 1017492003, 1017492004, 1017492005, 1017492006

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Residual Range Organics GC	LCS 120	72	(60-120)			167 mg/Kg	10/30/01	DS
	LCSD 111	67		7	(<20)	167 mg/Kg	10/30/200	DS
Diesel Range Organics	LCS 135	81	(75-125)			167 mg/Kg	10/30/01	DS
	LCSD 138	83		3	(<20)	167 mg/Kg	10/30/200	DS
Batch	XFC 5261							
Method	AK102/103							
Instrument	HP 5890 Series II FID SV C F							



CT&E Environmental Services Inc.

CT&E Ref# 401878 Lab Control Sample
 401879 Lab Control Sample Duplicate
 Client Name URS Corporation
 Project Name/# ARRC Roosevelt 74-37174179.10
 Matrix Soil/Solid

Printed Date/Time 11/02/2001 9:26
 Prep Batch XXX 9423
 Method
 Date 10/29/2001

QC results affect the following production samples:
 1017492007, 1017492008, 1017492009

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Diesel Range Organics	LCS 166	100	(75-125)			167 mg/Kg	10/31/01	DS
	LCSD 160	96		4	(< 20)	167 mg/Kg	10/31/200	DS
Residual Range Organics GC	LCS 115	69	(60-120)			167 mg/Kg	10/31/01	DS
	LCSD 139	83		19	(< 20)	167 mg/Kg	10/31/200	DS
Batch	XFC 5262							
Method	AK102/103							
Instrument	HP 5890 Series II FID SV CF							



CT&E Environmental Services Inc.

CT&E Ref.# 401881 Lab Control Sample

Printed Date/Time 11/02/2001 9:26

Prep Batch XXX 9424

Method

Date 10/29/2001

Client Name URS Corporation
 Project Name# ARRC Roosevelt 74-37174179.10
 Matrix Soil/Solid

QC results affect the following production samples:

1017492001, 1017492002, 1017492003, 1017492004, 1017492005, 1017492006, 1017492007, 1017492008,
 1017492009

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Aroclor-1016	LCS 0.398	90	(44-135)			0.444 mg/Kg	10/30/01	WAA
	LCSD 0.403	91		1	(< 30)	0.444 mg/Kg	10/30/200	WAA
Aroclor-1260	LCS 0.331	74	(52-123)			0.444 mg/Kg	10/30/01	WAA
	LCSD 0.336	76		2	(< 30)	0.444 mg/Kg	10/30/200	WAA

Batch XGC 4043
 Method SW846-8082
 Instrument HP 5890 Series II ECD SV I R



CT&E Environmental Services Inc.

CT&E Ref.# 1017492010 Billable Matrix Spike

Printed Date/Time 11/02/2001 9:26
 Prep Batch
 Method
 Date

Original 1017492009
 Matrix Soil/Solid

QC results affect the following production samples:

1017492001, 1017492002, 1017492003, 1017492004, 1017492005, 1017492006, 1017492007, 1017492008, 1017492009

Parameter	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
-----------	-----------------	-----------	-----------	---------------	-----	------------	---------------	---------------	------

Solids

Batch SPT 4173
 Method SM20 2540G
 Instrument

Semivolatile Organic Fuels Department

Diesel Range Organics	BMS 11.0 U	137	74	(60-140)			181 mg/Kg	10/31/01	DS
	BMSD	143	78		5	(< 50)	182 mg/Kg	10/31/01	DS

Batch XFC 5262
 Method AK102 DRO
 Instrument HP 5890 Series II FID SV C F

Semivolatile Organic Gas Chromatography

Aroclor-1260	BMS 0.0326 U	0.394	81	(52-123)			0.485 mg/Kg	10/30/01	WAA
	BMSD	0.390	81		1	(< 30)	0.48 mg/Kg	10/30/01	WAA
Aroclor-1016	BMS 0.0326 U	0.518	107	(44-135)			0.485 mg/Kg	10/30/01	WAA
	BMSD	0.519	108		0	(< 30)	0.48 mg/Kg	10/30/01	WAA

Batch XGC 4043
 Method SW846-8082
 Instrument HP 5890 Series II ECD SV I R



CT&E Environmental Services Inc.

CT&E Ref.# 402292 **Method** Blank
Client Name URS Corporation
Project Name/# ARRC Roosevelt 74-37174179.10
Matrix Soil/Solid

Printed Date/Time 11/02/2001 9:26
Prep **Batch**
Method
Date

QC results affect the following production samples:

1017492001, 1017492002, 1017492003, 1017492004, 1017492005, 1017492006, 1017492007, 1017492008,
 1017492009

Parameter	Results	PQL	Units	Analysis Date	Init
Solids					
Total Solids	100		%	10/30/01	DMR
Batch	SPT 4172				
Method	SM20 2540G				
Instrument					



CT&E Environmental Services Inc.

CT&E Ref.# 402297 Method Blank
Client Name URS Corporation
Project Name# ARRC Roosevelt 74-37174179.10
Matrix Soil/Solid

Printed Date/Time 11/02/2001 9:26
Prep Batch
Method
Date

QC results affect the following production samples:

Parameter	Results	PQL	Units	Analysis Date	Init
Solids					
Total Solids		100	%	10/30/01	DMR
Batch	SPT 4173				
Method	SM20 2540G				
Instrument					



CT&E Environmental Services Inc.

CT&E Ref.# 402293 Duplicate
 Client Name URS Corporation
 Project Name/# ARRC Roosevelt 74-37174179.10
 Original 1017513005
 Matrix Soil/Solid

Printed Date/Time 11/02/2001 9:26
 Prep Batch
 Method
 Date

QC results affect the following production samples:

1017492001, 1017492002, 1017492003, 1017492004, 1017492005, 1017492006, 1017492007, 1017492008, 1017492009

Parameter	Original Result	QC Result	RPD	RPD Limits	Analysis Date	Init
Solids						
Total Solids		68.2	1	(<20)	10/30/01	DMR
Batch	SPT 4172					
Method	SM20 2540G					
Instrument						



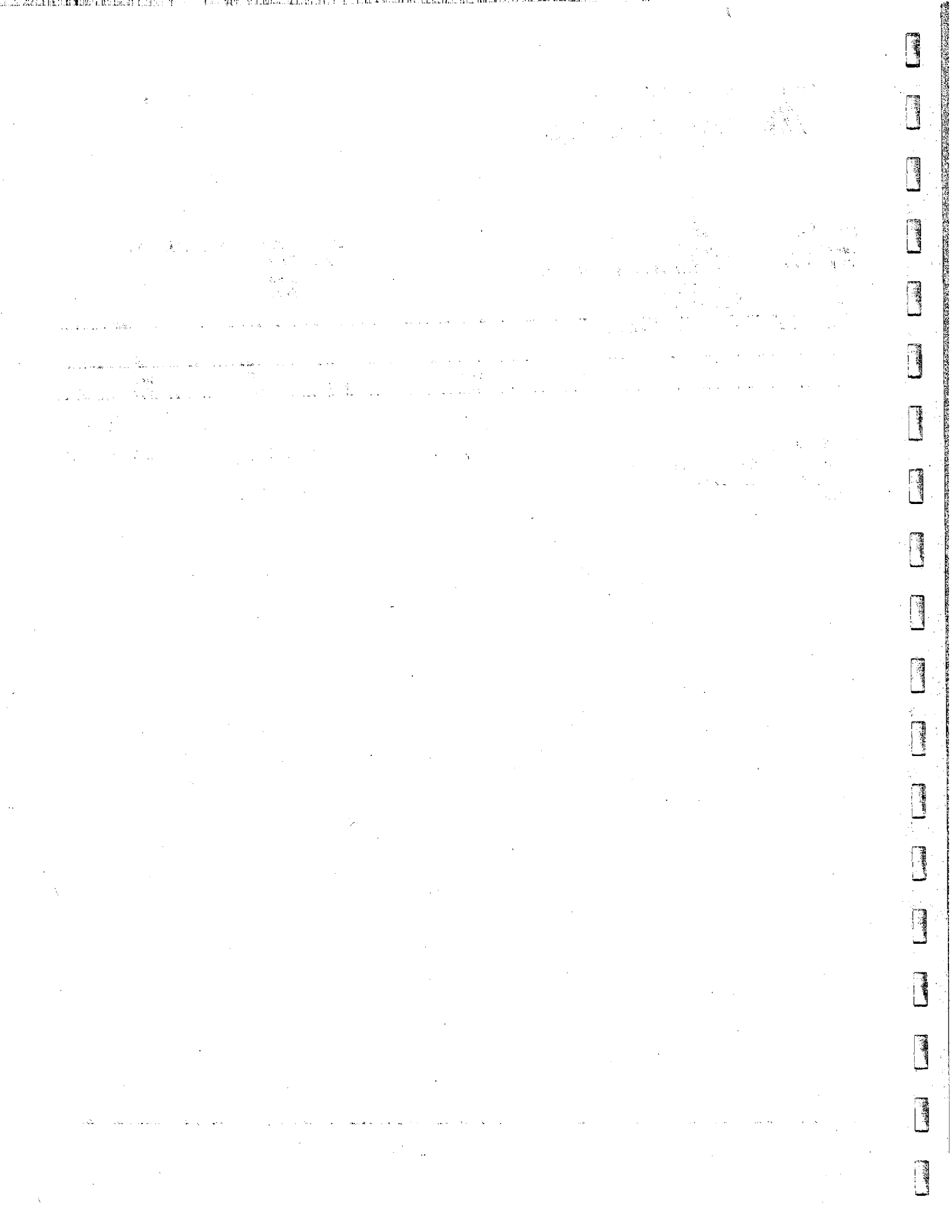
CT&E Environmental Services Inc.

CT&E Ref.# 402298 Duplicate
Client Name URS Corporation
Project Name/# ARRC Roosevelt 74-37174179.10
Original 1017232002
Matrix Soil/Solid

Printed Date/Time 11/02/2001 9:26
Prep **Batch**
Method
Date

QC results affect the following production samples:

Parameter	Original Result	QC Result	RPD	RPD Limits	Analysis Date	Init
Solids						
Total Solids		85.0	0	(<20)	10/30/01	DMR
Batch	SPT 4173					
Method	SM20 2540G					
Instrument						



ATTACHMENT D

BORING LOGS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Project: RRTS Investigation
Project Location: Anchorage to Eagle River Line Change
Project Number: 74-37174179.10

Log of Boring B-1

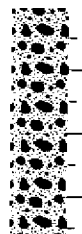







Sheet 1 of 3

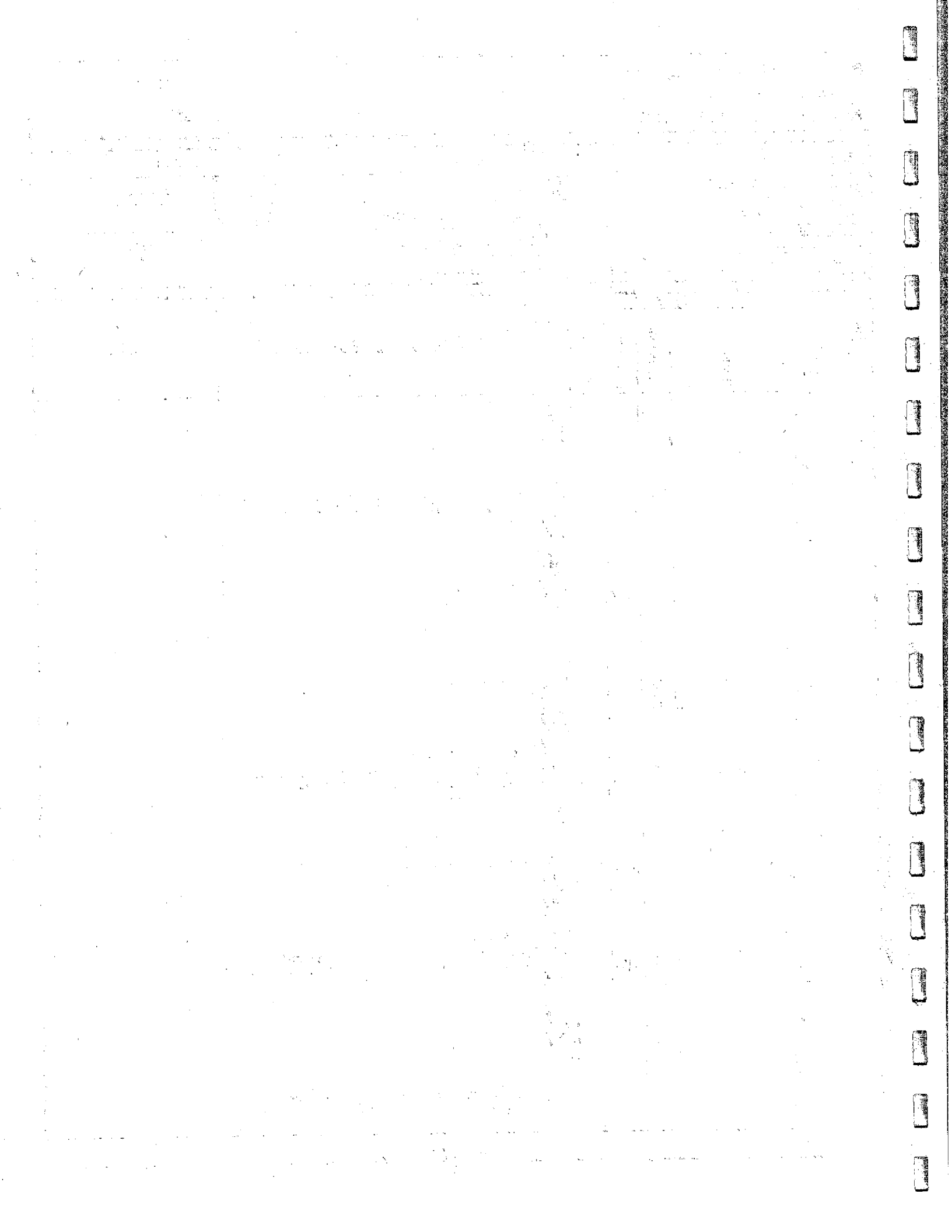
Date(s) Drilled: 10/22/01
 Drilling Method: Hollow Stem Auger
 Drill Rig Type: CME 55/Nodwell
 Groundwater Level and Date Measured:
 Borehole Completion: Boring backfilled with soil cuttings

Logged By: M. Gray
 Drill Bit Size/Type: 8"
 Drilling Contractor: Discovery Drilling
 Sampling Method(s): 2.5" Split spoon
 Location: See Site Plan

Checked By: B. Kovol
 Total Depth of Borehole: 50.3 feet
 Approximate Surface Elevation:
 Hammer Data: 340 lb., 30" drop

SAMPLES

Elevation feet	Depth, feet	Type	Number	Blows/foot	Recovery	PID (ppmv)	Graphic Log	MATERIAL DESCRIPTION	REMARKS
0									
2			1-3	13 14 50 for 0"	6/12			SANDY GRAVEL (SP), brown, fine- to medium-grained sand, gravel to 2.5" diameter, subrounded, very dense, moist	
4			2-6.5	13 14 15 16	12/24			Same as above	
6			3-9	14 15 18 10	6/24			Same as above; dense	
8			4-11.5	13 14 10 10	18/24			Increase in sand content SANDY GRAVEL (SP), brown to dark gray, coarse- to medium-grained sand, gravel to 2.5" diameter, subrounded, dense	
10			5-14	13 4 28 2	12/24			Same as above; very dense	
12			6-16.5	18 20 22 17	12/24			Increase in sand content SANDY GRAVEL (SP), brown to gray, medium- to coarse-grained sand, gravel to 2.5" diameter, subround	
14			7-19	17 21 20 24	18/24			Same as above	
16								SILTY SANDY GRAVEL (SM), brown, medium-grained sand, gravel to 0.75" diameter, subround, very dense, wet	
18									
20									



Project: RRTS Investigation
 Project Location: Anchorage to Eagle River Line Change
 Project Number: 74-37174179.10

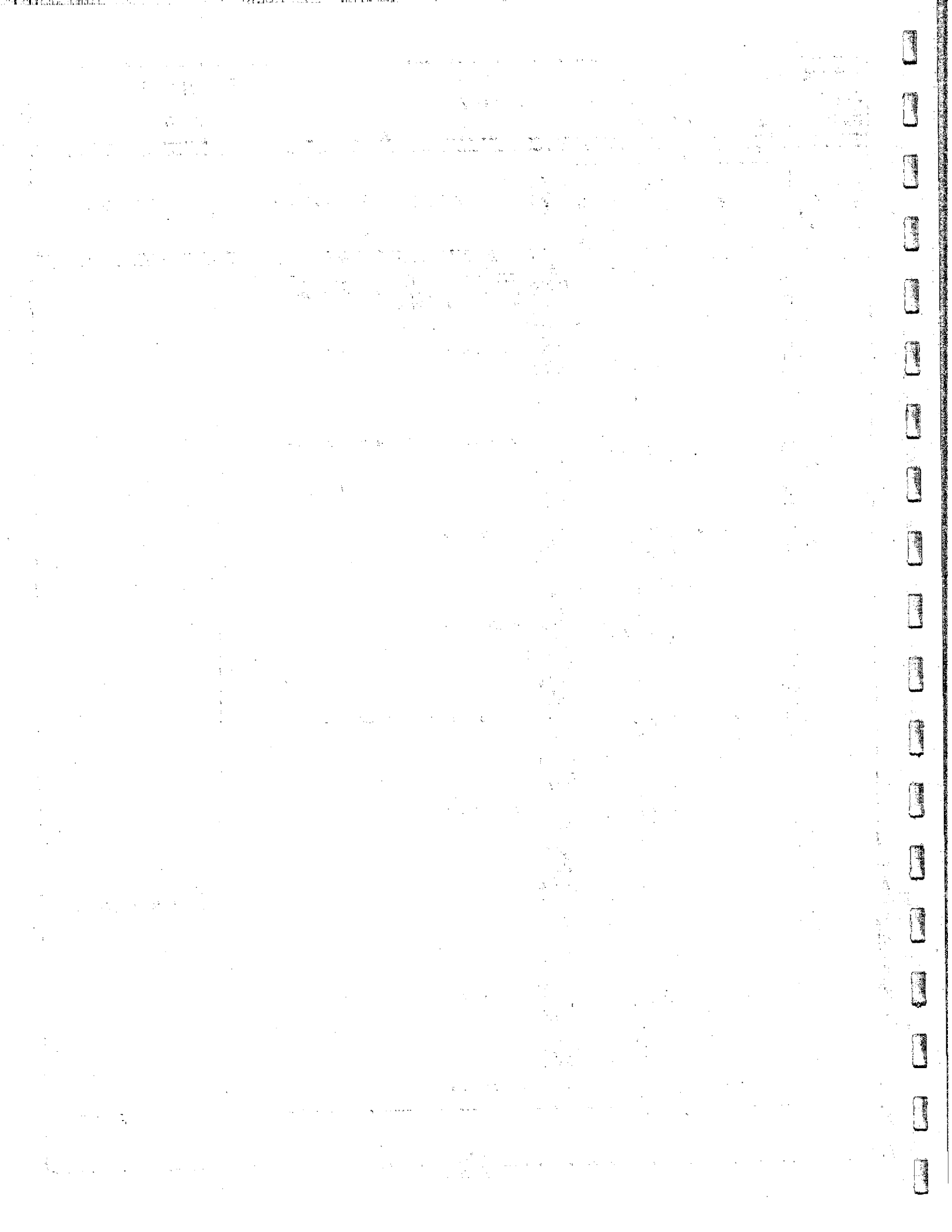
Log of Boring B-1

Sheet 2 of 3

SAMPLES

Elevation feet	Depth, feet	Type	Number	Blows/foot	Recovery	PID (ppmv)	Graphic Log	MATERIAL DESCRIPTION	REMARKS
20	8-21.5		14 38 38 40	24/24				SAND (SP), brown, fine- to medium-grained, very dense, moist to wet SANDY GRAVEL (SP), brown, medium- to coarse-grained sand, gravel to 2.5" diameter, subrounded, very dense	Slight perched aquifer @ 20' bgs
22	9-24		18 27 34 31	24/24				Same as above; slight increase in sand content	
24	10-26		39 40 E0 for 3"	15/15				Same as above; slight decrease in sand content	
26	11-28.5		41 45 E0 for 5"	17/17				Same as above	
28	12-31		19 33 E0 for 3"	15/15				Same as above	
30	13-33.5		42 50 E0 for 2"	14/14				Same as above; increasing sand content	
32	14-35.5		50 E7 for 6"	12/12				Same as above	
34									
36									
38									Split spoon refusal @ 37.5' bgs
40	15-40.5		82 100 for 6"	12/12				Same as above	
42	16-44		44 46	24/24				Same as above	

Report: ENV_12SW_ANCHORAGE; File: ARRC.GPJ; 11/16/2001 B-1



Project: RRTS Investigation
Project Location: Anchorage to Eagle River Line Change
Project Number: 74-37174179.10

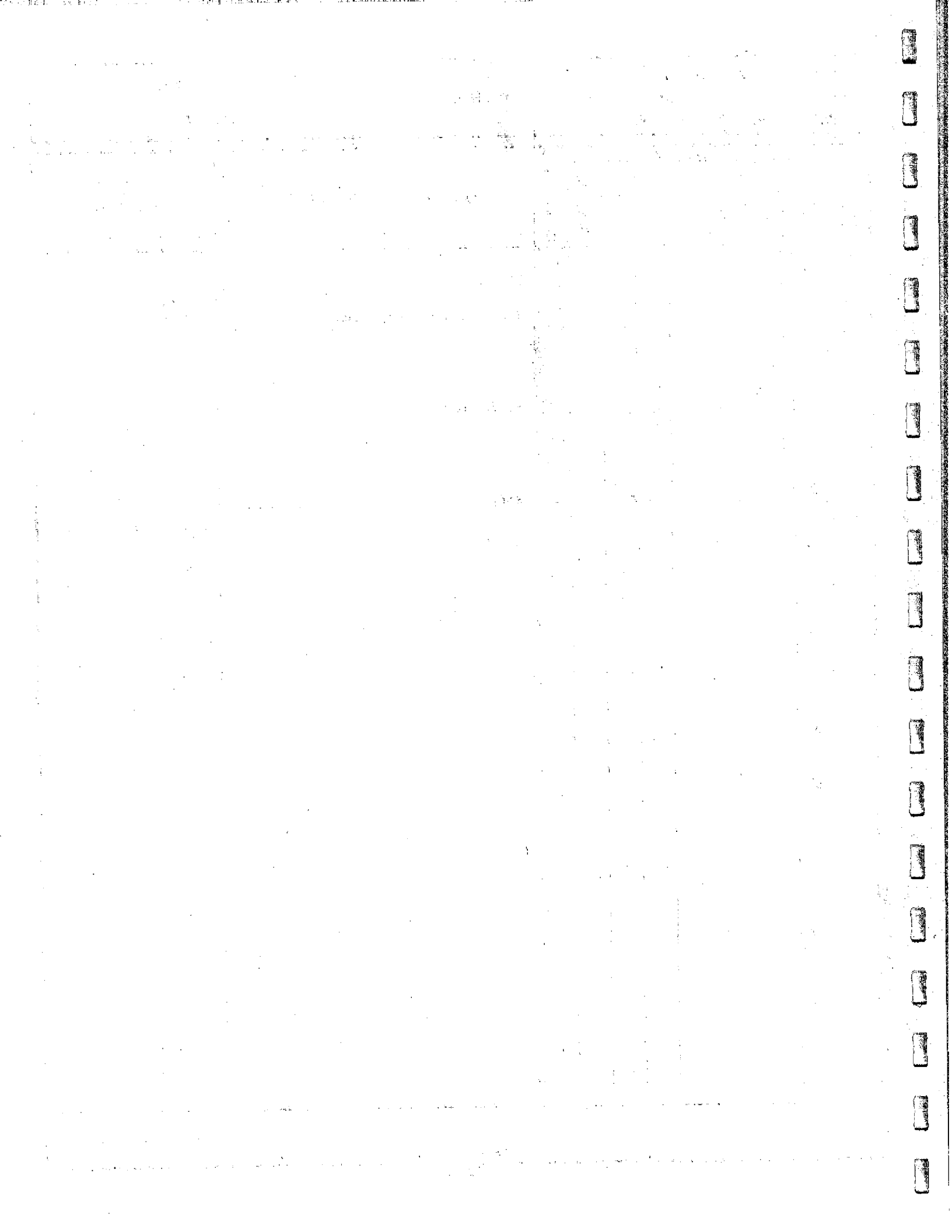
Log of Boring B-1

Sheet 3 of 3

SAMPLES

Elevation feet	Depth, feet	Type	Number	Blows/foot	Recovery	PID (ppmv)	Graphic Log	MATERIAL DESCRIPTION	REMARKS
44	42			29					
46	17-45.5			35 50	12/12			Same as above; increasing sand content	
48	18-49			33 39 35 39	24/24			Same as above	
50	19-50			110 for 3"3/3				Same as above	
52									
54									
56									
58									
60									
62									
64									
66									

Boring completed to 50.3' bgs



Project: RRTS Investigation
 Project Location: Anchorage to Eagle River Line Change
 Project Number: 74-37174179.10

Log of Boring B-2

Sheet 1 of 3

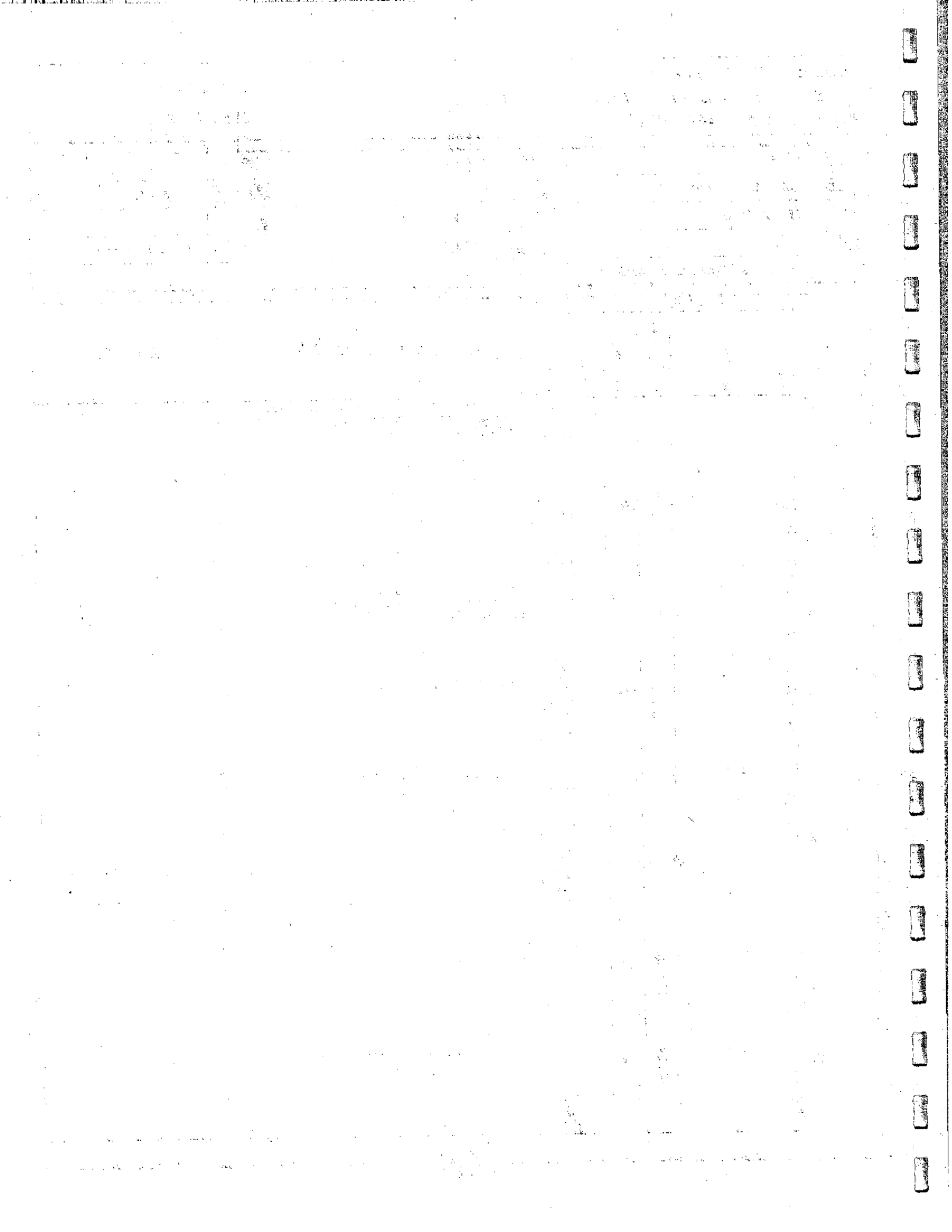
Date(s) Drilled: 10/23/01
 Drilling Method: Hollow Stem Auger
 Drill Rig Type: CME 55/Nodwell
 Groundwater Level and Date Measured:
 Borehole Completion: Boring backfilled with soil cuttings

Logged By: M. Gray
 Drill Bit Size/Type: 8"
 Drilling Contractor: Discovery Drilling
 Sampling Method(s): 2.5" Split spoon
 Location: See Site Plan

Checked By: B. Kovol
 Total Depth of Borehole: 51.8 feet
 Approximate Surface Elevation:
 Hammer Data: 340 lb., 30" drop

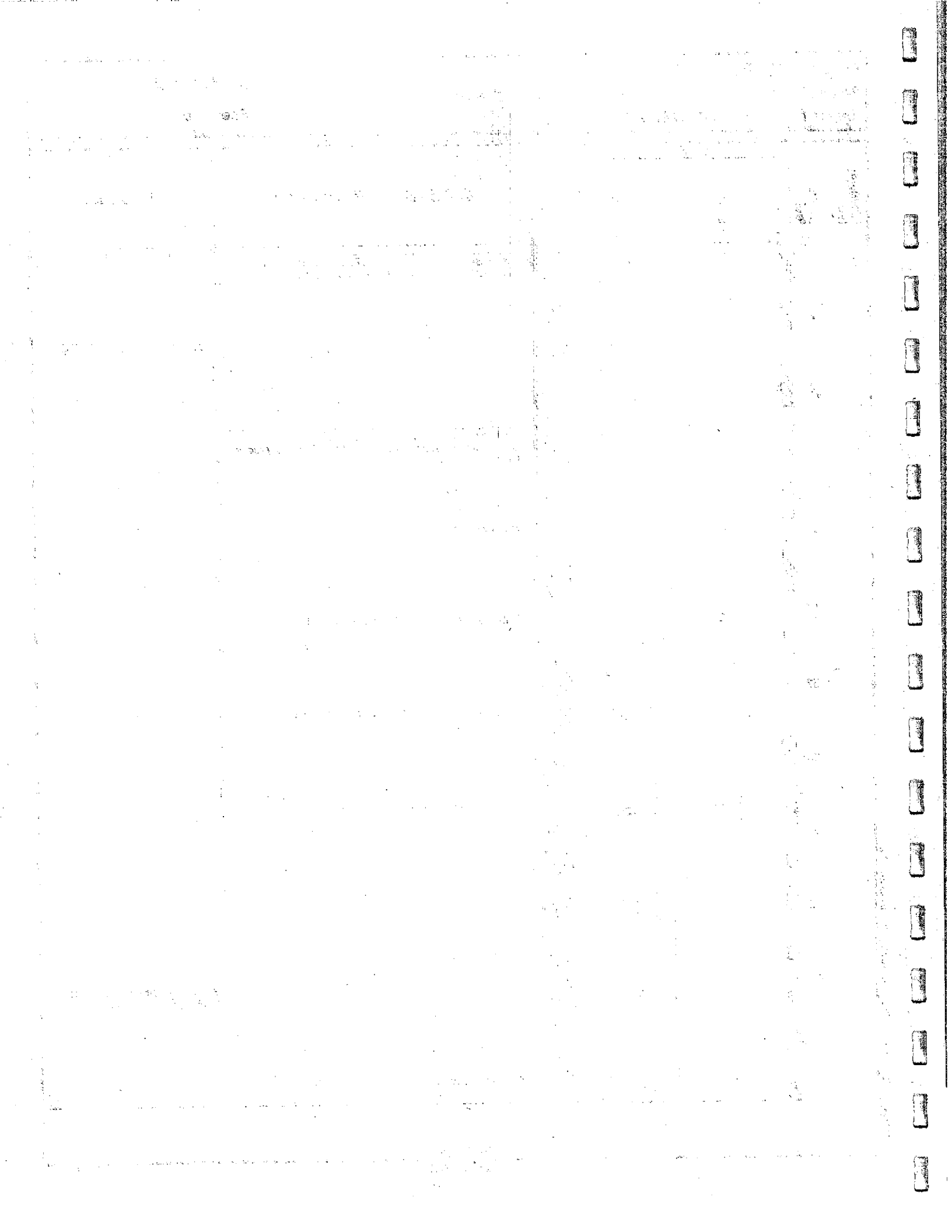
SAMPLES

Elevation feet	Depth, feet	Type	Number	Blows/foot	Recovery	PID (ppmv)	Graphic Log	MATERIAL DESCRIPTION	REMARKS
0								SILTY SANDY GRAVEL (SM), brown, medium- to fine-grained sand, gravel to 2.5" diameter, subround, dense, some organics, moist	
2			1-4	12 16 17 11	24/24				
4									
6			2-6.5	12 19 22 19	18/24			SANDY GRAVEL (SP), brown, medium- to coarse-grained sand, gravel to 2.5" diameter, subrounded, dense, moist	
8			3-9	12 12 16 18	14/24			Same as above	
10			4-11.5	11 23 20 25	14/24			Same as above; decrease in sand content	
12									
14									
16									
18									
20									
									Split spoon refusal @ 12.5' bgs



SAMPLES

Elevation feet	Depth, feet	Type	Number	Blows/foot	Recovery	PID (ppmv)	Graphic Log	MATERIAL DESCRIPTION	REMARKS
20	20		7-21.5	24 33 24 50	24/24			SILTY SANDY GRAVEL (SM), fine- to coarse-grained sand, gravel to 2" diameter, very dense, moist	Slight perched aquifer @ 20' bgs
22	22			£5 for 0" 0/0					Split spoon refusal @ 22.5' bgs
24	24								
26	26		8-25	125 for 6" 3/6				SANDY GRAVEL (SP), brown, medium- to coarse-grained sand, gravel to 2.5" diameter, very rocky, very dense, moist	
28	28		9-28	45 £7 for 3" 9/9				Same as above	
30	30		10-31	23 50 £0 for 3"	15/15			Same as above; sand slightly finer-grained	
32	32								
34	34		11-33	27 31 £0 for 3"	15/15			Same as above; increase in coarse-grained sand	
36	36		12-35.5	9 110 for 6" 2/12				Same as above; increasing sand content	
38	38		13-38.5	29 44 £0 for 6"	18/18				
40	40			70 £0 for 6" 0/12					Split spoon refusal, rock in the shoe, @ 40' bgs
42	42								
			14-44	30 33	24/24			Same as above; slight increase in moisture	

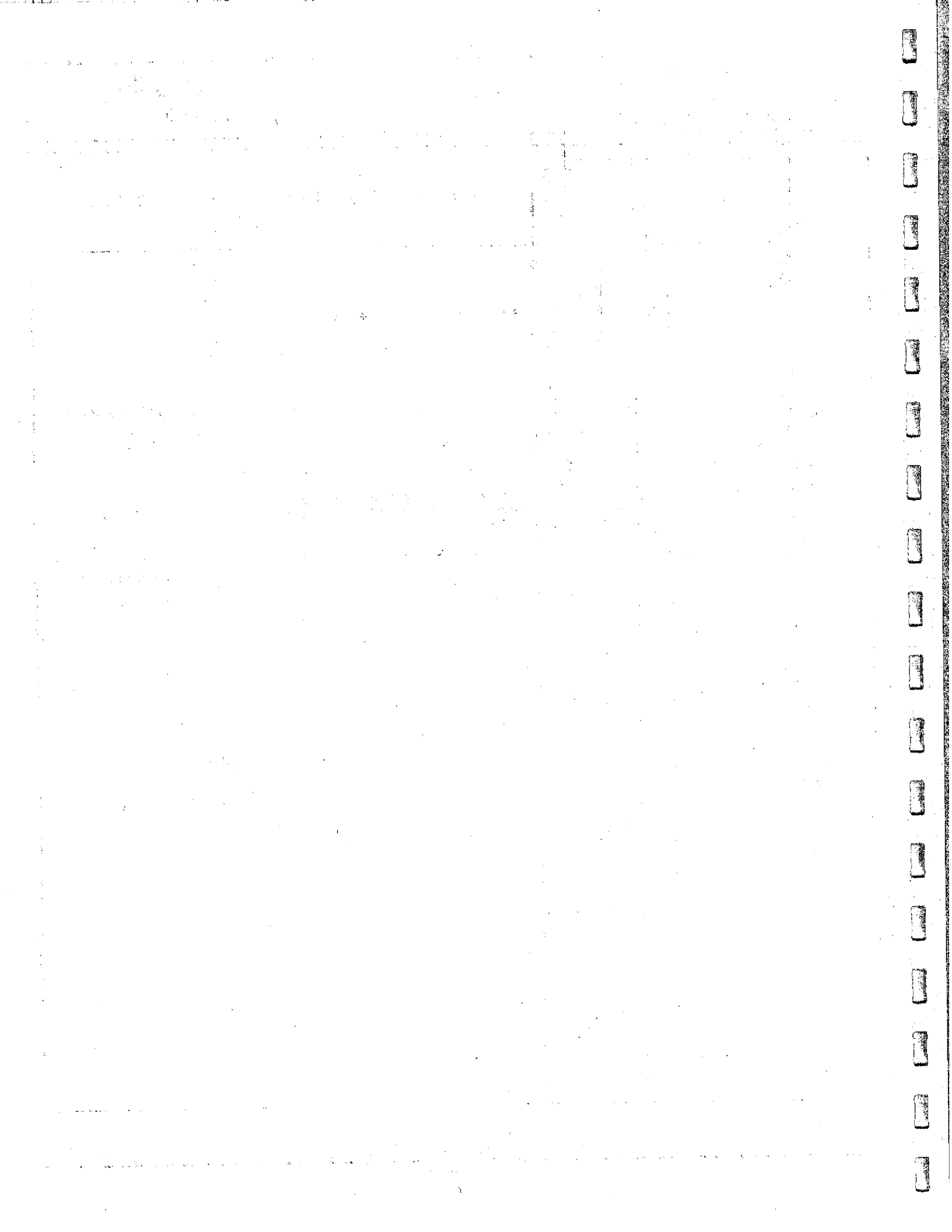


Project: RRTS Investigation
 Project Location: Anchorage to Eagle River Line Change
 Project Number: 74-37174179.10

Log of Boring B-2

Sheet 3 of 3

Elevation feet		Depth, feet		SAMPLES		Blows/foot	Recovery	PID (ppmv)	Graphic Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number									
44						32 25					
46		15-46.5				18 20 19 21	24/24			Same as above; decrease in sand content	
48						£8 for 6" 0/6					Split spoon refusal @ 47.5 bgs
50		16-51				15 17 34 £0 for 3"	21/21			SILTY SANDY GRAVEL (SM), brown, medium- to coarse-grained sand, gravel to 2.5" diameter, very dense, moist to wet	
52											Boring completed to 51.75' bgs
54											
56											
58											
60											
62											
64											
66											



Project: RRTS Investigation
Project Location: Anchorage to Eagle River Line Change
Project Number: 74-37174179.10

Log of Boring B-3

Sheet 1 of 3

Date(s) Drilled: 10/23/01 - 10/24/01

Drilling Method: Hollow Stem Auger

Drill Rig Type: CME 55/Nodwell

Groundwater Level and Date Measured

Borehole Completion: Boring backfilled with soil cuttings

Logged By: M. Gray

Drill Bit Size/Type: 8"

Drilling Contractor: Discovery Drilling

Sampling Method(s): 2.5" Split spoon

Location: See Site Plan








Checked By: B. Kovol

Total Depth of Borehole: 52.0 feet

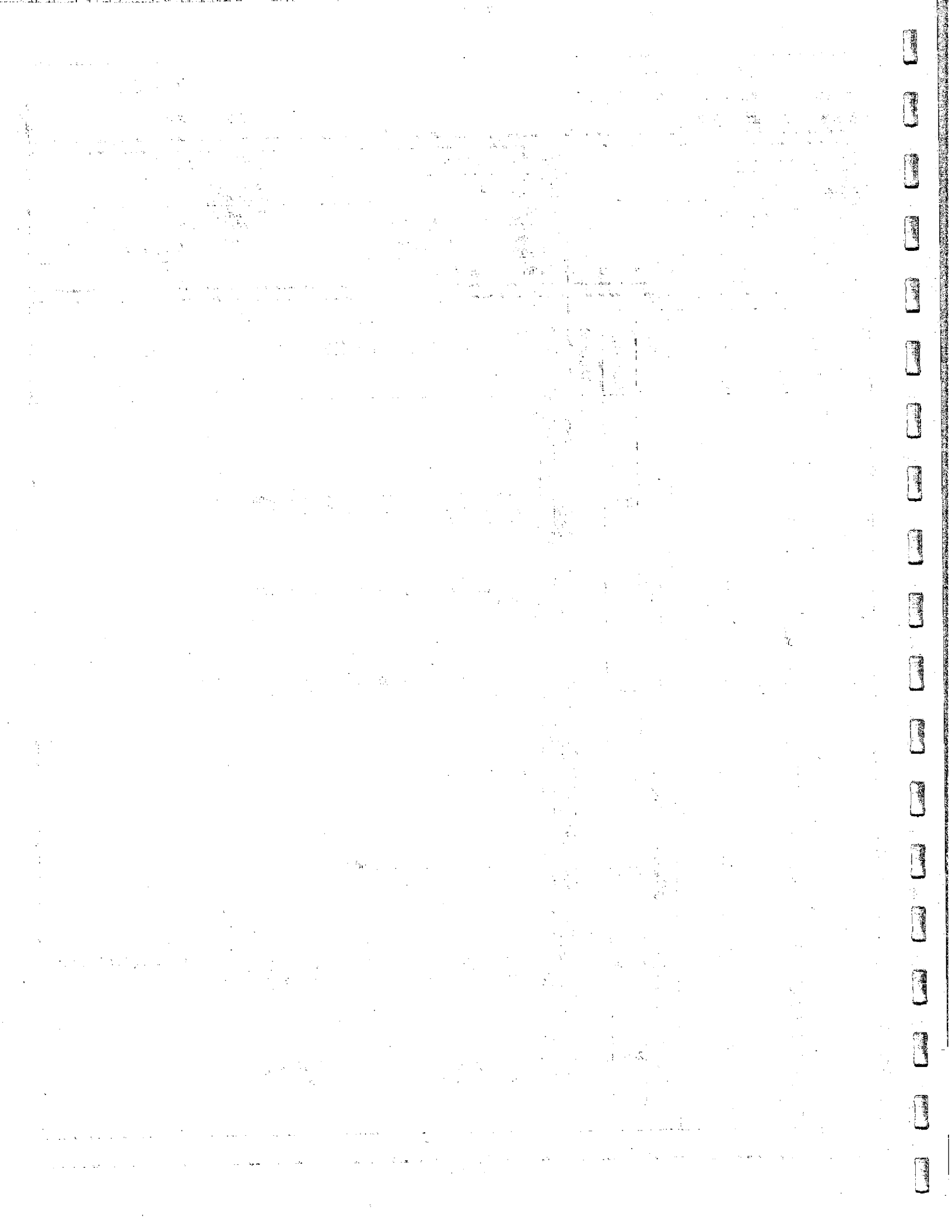
Approximate Surface Elevation

Hammer Data: 340 lb., 30" drop

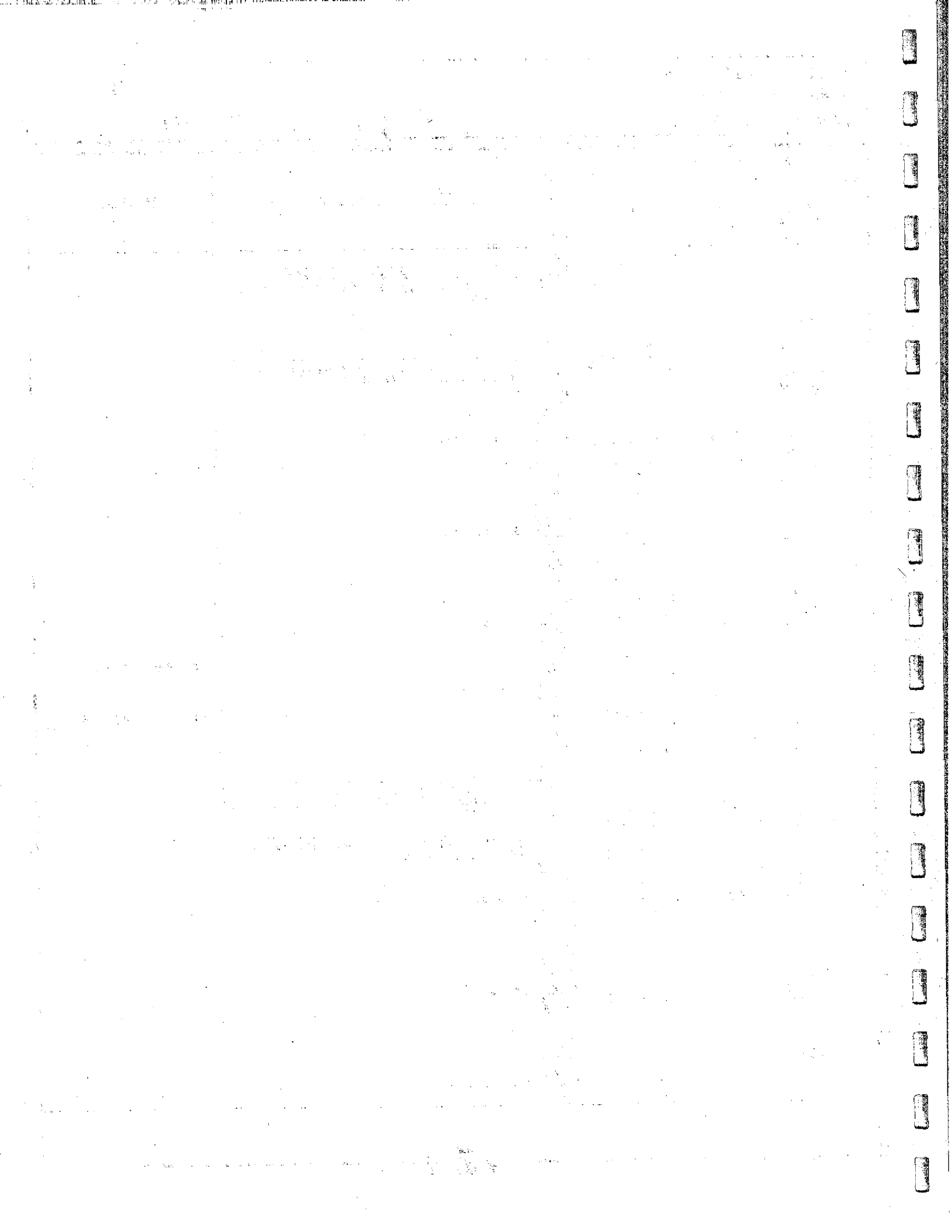
SAMPLES

Elevation feet	Depth, feet	Type	Number	Blows/foot	Recovery	PID (ppmv)	Graphic Log	MATERIAL DESCRIPTION	REMARKS
0									
2									
4	1-4		14 15 17 15	18/24				SANDY GRAVEL (SP), brown, medium-grained sand, gravel to 2.5" diameter, subrounded, dense, some organics, moist	
6	2-6.5		44 34 16 39	6/24				Same as above; no organics, very dense, decreased moisture	
8	3-9		19 28 20 26	18/24				Same as above; coarse-grained sand, increased moisture	
10	4-11.5		36 22 22 22	24/24				Same as above	
12	5-14		12 19 21 15	24/24				Same as above; decrease in sand content	
14	6-16.5		9 11 13 19	24/24				SILTY SAND with gravel (SM), fine- to medium-grained sand, gravel to 1" diameter, subround, dense, moist	Slight perched aquifer @ 15' bgs
16	7-19		9 12 13 27	24/24				SANDY GRAVEL (SP), brown, coarse-grained sand, gravel to 2.5" diameter, subround, very dense, moist	
18									
20									

Report: ENV_12S/WL_ANCHORAGE; File: ARRC.GPJ; 11/16/2001 B-3



Elevation feet		Depth, feet		Type	Number	Blows/foot	Recovery	PID (ppmv)	Graphic Log	MATERIAL DESCRIPTION	REMARKS
20	22	20	22		8-21.5	12 15 18 24	24/24			SILTY SANDY GRAVEL (SM), brown, medium- to coarse-grained sand, gravel to 1" diameter, very dense, moist to wet	
22	24	22	24		9-24	15 17 26 31	24/24			SANDY GRAVEL (SP), brown, coarse-grained sand, gravel to 2.5" diameter, very dense, moist	
24	26	24	26		10-26	23 29 30 50 for 3"	21/21			Same as above	
26	28	26	28		11-27.5	50 for 6" 6/6				Same as above	
28	30	28	30		12-30	50 for 6" 6/6				Same as above	
30	32	30	32							Same as above	
32	34	32	34			130 for 0" 0/0				Same as above	Very hard drilling - rocky
34	36	34	36							Same as above	Split spoon refusal @ 32.5' bgs
36	38	36	38		13-35	38 20 50 for 2"	8/8			SILTY SANDY GRAVEL (SM), medium- to coarse-grained sand, gravel to 2.5" diameter, very dense, moist	
38	40	38	40		14-37.5	20 45 50 for 3"	9/9			Same as above	
40	42	40	42		15-40	28 38 50 for 3"	9/9			Same as above	
42		42			16-44	29 60	24/24			Same as above	

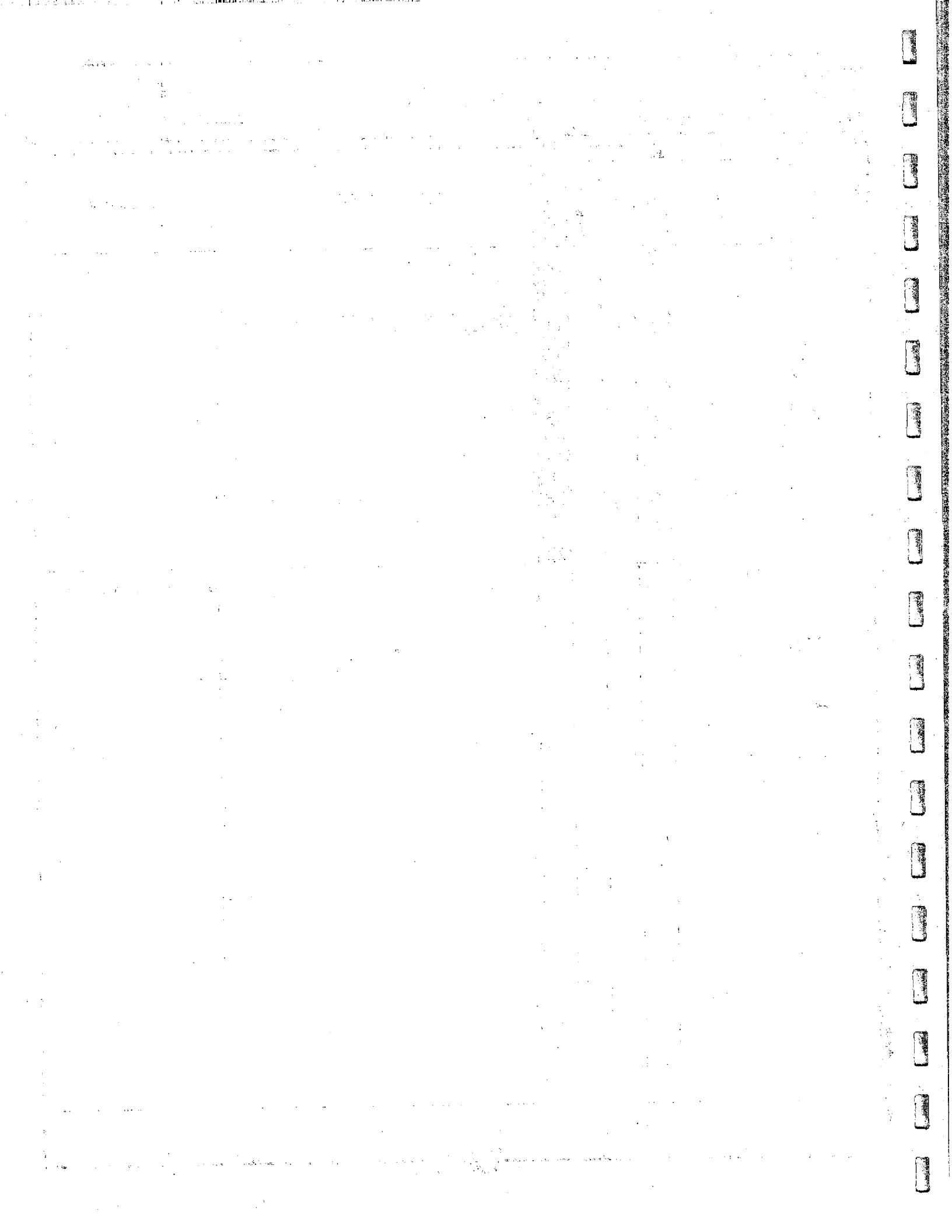


Project: RRTS Investigation
Project Location: Anchorage to Eagle River Line Change
Project Number: 74-37174179.10

Log of Boring B-3

Sheet 3 of 3

Elevation feet		DEPTH		SAMPLES		Recovery	PID (ppmv)	Graphic Log	MATERIAL DESCRIPTION	REMARKS
		Number	Blows/foot							
	44		39 50							
	46	17-46.5	34 35 32 50 for 6"	24/24					Same as above; Increase in sand content, decrease in gravel size to 1.5" diameter	
	48	18-48.5	18 21 32 50 for 2"	20/20					Same as above	
	50	19-51.5	23 37 30 34	24/24						
	52									Boring completed to 52' bgs
	54									
	56									
	58									
	60									
	62									
	64									
	66									



Project: RRTS Investigation

Project Location: Anchorage to Eagle River Line Change

Project Number: 74-37174179.10

Log of Boring B-4

Sheet 1 of 3

Date(s) Drilled 10/24/01

Drilling Method Hollow Stem Auger

Drill Rig Type CME 55/Nodwell

Groundwater Level and Date Measured

Borehole Completion Boring backfilled with soil cuttings

Logged By M. Gray

Drill Bit Size/Type 8"

Drilling Contractor Discovery Drilling

Sampling Method(s) 2.5" Split spoon

Location See Site Plan

Checked By B. Kovol

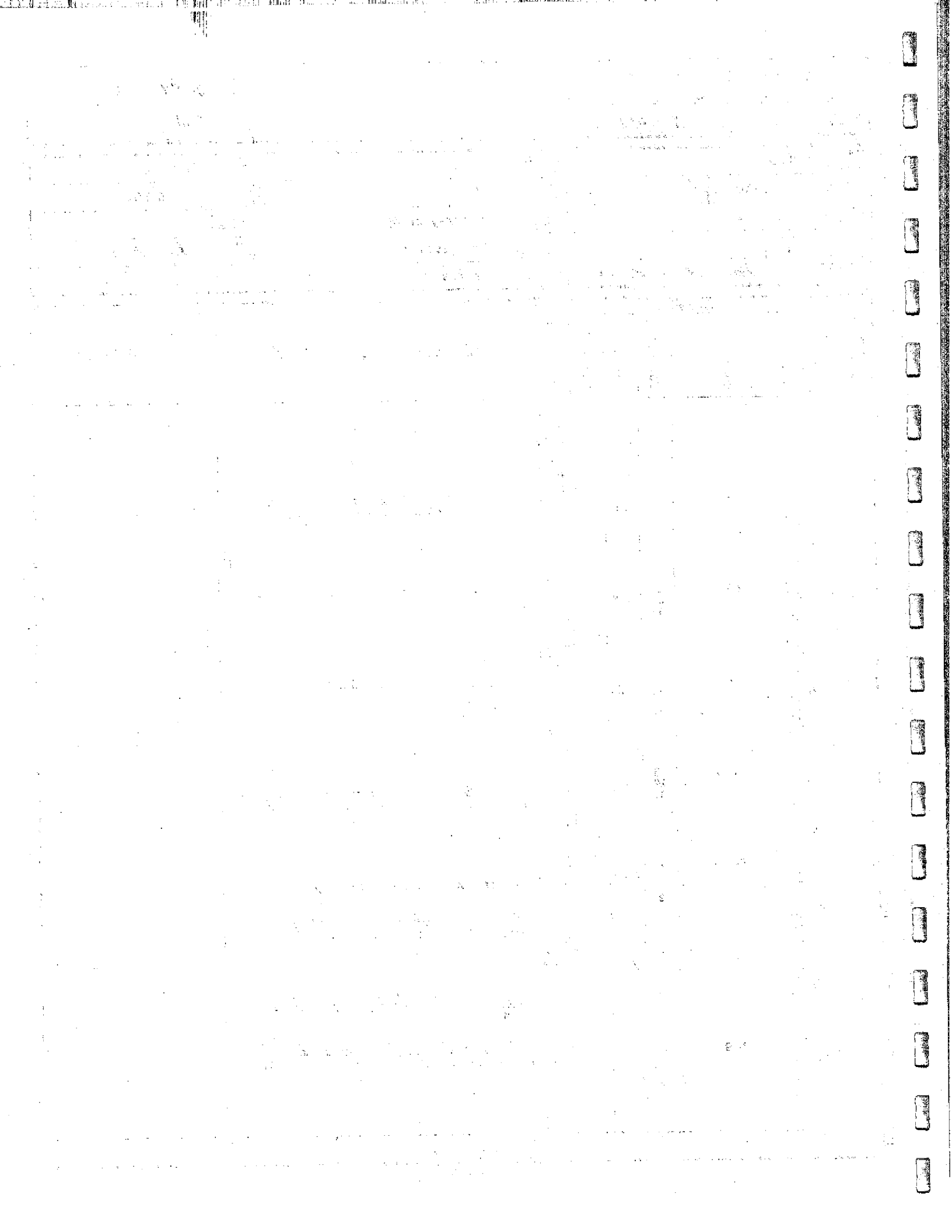
Total Depth of Borehole 50.3 feet

Approximate Surface Elevation

Hammer Data 340 lb., 30" drop

SAMPLES

Elevation feet	Depth, feet	Type	Number	Blows/foot	Recovery	PID (ppmv)	Graphic Log	MATERIAL DESCRIPTION	REMARKS
0									
2									
4	1-4		10 11 15 20	18/24				SILTY SANDY GRAVEL (SM), brown, medium-grained sand, gravel to 2.5" diameter, dense, some organics, moist	
6	2-6.5		21 22 16 16	18/24				Same as above; decrease in silt content, no organics	
8	3-9		12 20 16 52	24/24				Same as above; decrease in sand content	
10	4-11.5		18 22 31 17	24/24				Same as above; medium- to coarse-grained sand, gravel to 1.5" diameter, subround, very dense	
12	5-14		7 10 14 9	24/24				Same as above; increase in silt content	
14	6-16.5		7 12 15 16	24/24				SANDY GRAVEL (SP), brown, coarse-grained sand, gravel to 1.5" diameter, subround, dense, moist	
16								SAND (SP), brown, fine- to very fine-grained, dense, moist	
18	7-19		6 10 19 50 for 6"	24/24				SILTY SANDY GRAVEL (SM), brown, fine- to very fine-grained sand, gravel to 2" diameter, very dense, moist to wet	
20									



Project: RRTS Investigation

Project Location: Anchorage to Eagle River Line Change

Project Number: 74-37174179.10

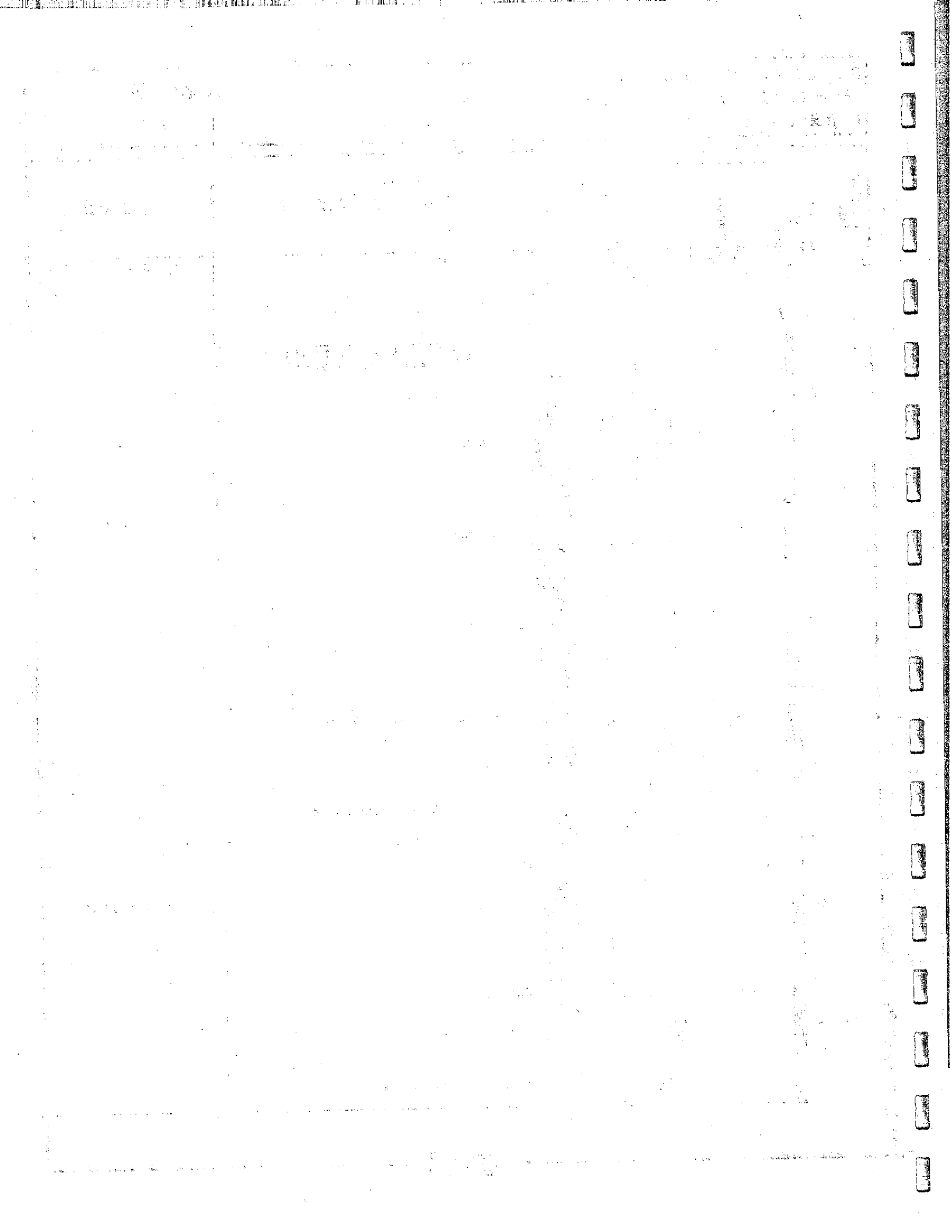
Log of Boring B-4

Sheet 2 of 3

SAMPLES

Elevation feet	Depth, feet	Type	Number	Blows/foot	Recovery	PID (ppmv)	Graphic Log	MATERIAL DESCRIPTION	REMARKS
20			8-21.5	53 16 21 25	24/24			Same as above	Collected equipment blank from split spoon
22			9-24	15 26 25 25	24/24			SANDY GRAVEL (SP), brown, coarse-grained sand, gravel to 2.5" diameter, subround, very dense, moist	
24			10-26.5	15 29 31 50	24/24			Same as above	
26			11-28	35 £0 for 6" 12/12				Same as above	
28			12-31.5	46 46 36 33	24/24			Same as above	
30			13-34	18 24 22 £0 for 6"	24/24			Same as above; increase in sand content	
32			14-35	£0 for 4" 4/4				Same as above; decrease in sand content	
34			15-41.5	41 £0 for 4" 0/10				Same as above	Split spoon refusal @ 37.5' bgs
36			16-44	25 25 37 £0 for 6"	24/24			Same as above	
38				24 27	24/24			Same as above; increase in sand content	
40									
42									

Report: ENV_125W_ANCHORAGE; File: ARRC.GPJ; 11/16/2001 B-4



Project: RRTS Investigation

Project Location: Anchorage to Eagle River Line Change

Project Number: 74-37174179.10

Log of Boring B-4

Sheet 3 of 3

Elevation feet		Depth, feet		Type	Number	Blows/foot	Recovery	PID (ppmv)	Graphic Log	MATERIAL DESCRIPTION	REMARKS
44						24 30					
46		17-46.5				29 38 34 34	24/24			Same as above	
48		18-48				29 44				Same as above	
50		19-50				60 for 3"	3/3				
52											
54											
56											
58											
60											
62											
64											
66											

Boring completed to 50.3' bgs

