

**MUNICIPAL DISTRICT OF YELLOWHEAD NO. 94  
BYLAW NO. 27.95**


*BEING A BYLAW TO  
ADOPT AN AREA STRUCTURE PLAN*

**WHEREAS**, the Planning Act, Being Chapter P-9, R.S.A., 1980, and amendments thereto, authorize a Council, after holding a public hearing to proceed to pass a bylaw adopting an area structure plan;

**AND WHEREAS**, a public hearing was held in respect to the proposed area structure plan on the date written below;

**NOW THEREFORE**, the Council for the Municipal District of Yellowhead No. 94, in the Province of Alberta, duly assembled, hereby enacts as follows:

- 1) That the Sundance Receptions Area Structure Plan dated June, 1995 and attached hereto as Schedule "A" for land described as part of the Southeast Quarter, Section Seven (7), Township Fifty-Three (53), Range Nineteen (19), West of the Fifth (5th) Meridian is hereby adopted.
- 2) This bylaw comes into force at the beginning of the day that it is passed in accordance with Section 189 of the Municipal Government Act, R.S.A., 1994.

 READ a first time this 11th day of July, A.D., 1995.


PUBLIC HEARING held this 25th day of July, A.D., 1995.

READ a second time this 25th day of July, A.D., 1995.

READ a third time this 25th day of July, A.D., 1995.

SIGNED this 25th day of July, A.D., 1995.

  
Reeve

  
Municipal Secretary

**SUNDANCE RECREATIONS**

**AREA STRUCTURE PLAN**

**JULY 1995**

*Prepared by:*

Walker Consulting Group Ltd.  
Tower III, Suite 200, 9618 - 42 Avenue  
Edmonton, Alberta  
T6E 5Y7  
Tel: (403) 463-8137

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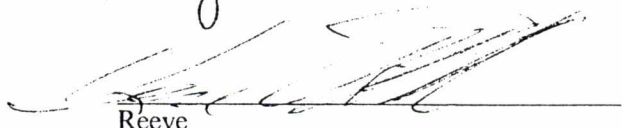
READ a first time this 11th day of July, A.D., 1995.

PUBLIC HEARING held this 25th day of July, A.D., 1995.

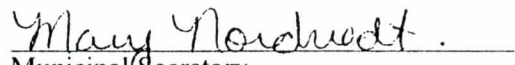
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Reeve

  
Municipal Secretary

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7. **SPECIAL SEWAGE DISPOSAL REQUIREMENTS**

A geotechnical investigation within the developable areas was conducted by J.R. Paine & Associates in June of 1995 (*provided as the Appendix of this report*). This report determined that the general groundwater table remains more than 3.0 metres below ground surface and dissipation rates are higher than the minimum standards of Alberta Environmental Protection interim guidelines for residential subdivision. An additional environmental study will be required if a standard weeping lateral sewage disposal system is utilized or alternatively an approved installation by a professional engineer licensed to practice in the Province of Alberta or alternatively an approved installation by Alberta Labour for the soil conditions encountered in the geotechnical investigation. The developer will register an instrument on the title of each parcel to ensure compliance with this provision.

8. **RESERVE AREA**

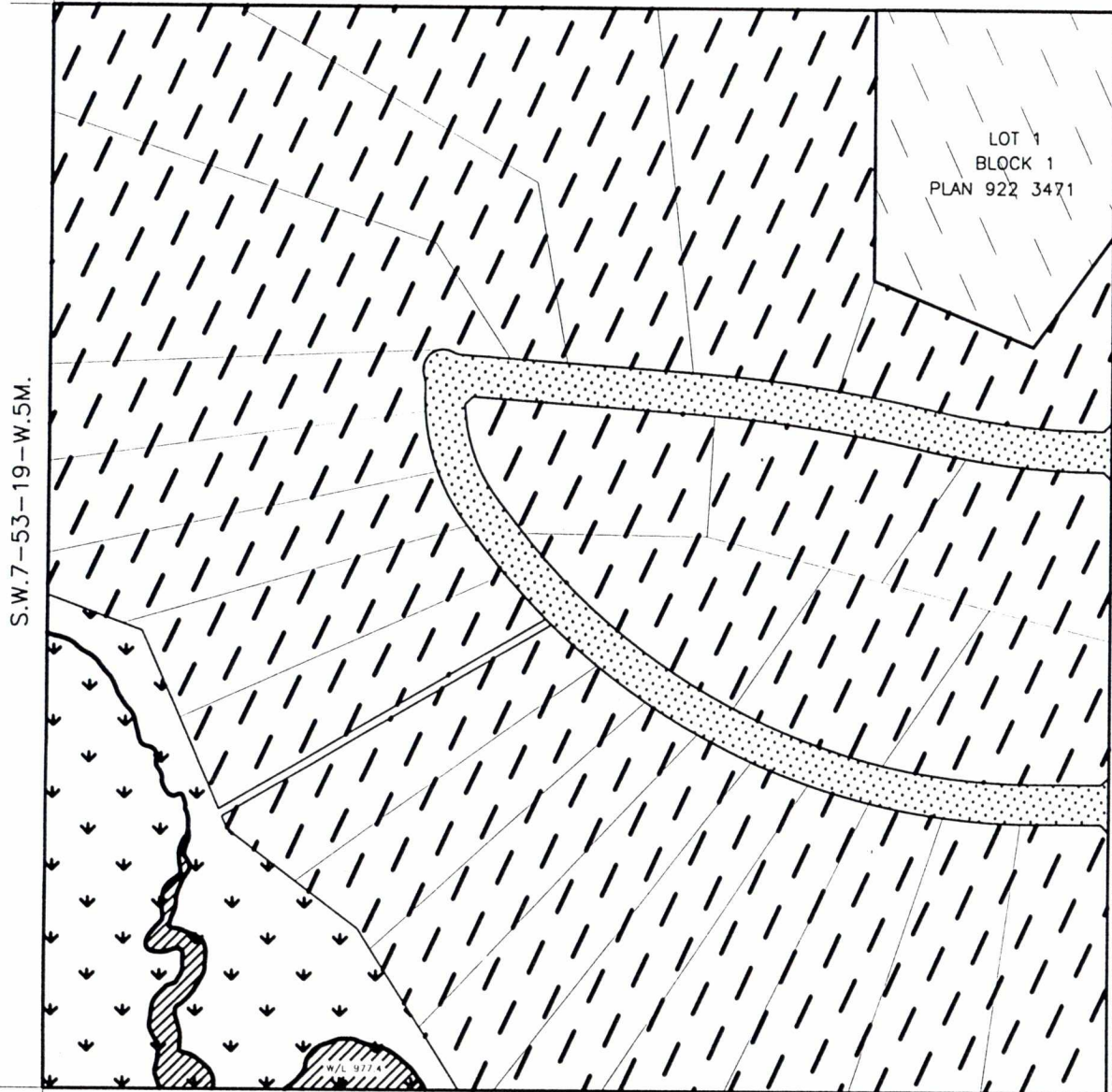
The southwest of the ASP is shown as environmental reserve. This portion of the plan is set aside to preserve the natural character of the creek and open water. Its boundary is above the 980 contour to maintain a 2 metre drop to the water level.

There is no municipal reserve planned for the Sundance Receptions ASP.

*Figure 4* shows the Development Concept for the Sundance Receptions ASP.

N.E.7-53-19-W.5M.

S.W.7-53-19-W.5M.



N.E.6-53-19-W.5M.

C. of T.

ROAD PLAN 902 3577

RANGER ROAD

LOT 1  
BLOCK 1  
PLAN 922 3471

5m Road Widening  
Plan 942 0604



# LEGEND



PROPOSED RESIDENTIAL,  
(SPECIAL SEWAGE DISPOSAL  
REQUIREMENTS - SEE SECTION 7)



EXISTING  
RESIDENTIAL PARCEL



ENVIRONMENTAL  
RESERVE



PROPOSED  
ROAD



CREEK &  
OPEN WATER

Schedule "A"

M.D. 94

Bylaw No. 27.95

# Development Concept

SUNDANCE RECREATIONS ASP

WALKER CONSULTING GROUP LTD.

# FIGURE 4

**GEOTECHNICAL INVESTIGATION  
PROPOSED ACREAGE SUBDIVISION  
SE 7-53-19-5  
NEAR MARLBORO, ALBERTA**

**FILE NO: 2949-1**

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GEOTECHNICAL INVESTIGATION  
PROPOSED ACREAGE SUBDIVISION  
SE 7-53-19-5  
NEAR MARLBORO, ALBERTA

---

---

JUNE, 1995

J.R. PAINE & ASSOCIATES LTD.  
3051 Parsons Road  
EDMONTON, Alberta  
T6N 1C8

Phone: 462-1288  
Fax: 450-1664

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**FILE NO: 2949-1**

GEOTECHNICAL INVESTIGATION  
PROPOSED ACREAGE SUBDIVISION  
SE 7-53-19-5  
NEAR MARLBORO, ALBERTA

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## GEOTECHNICAL INVESTIGATION

PROJECT: Proposed Acreage Subdivision

LOCATION: SE 1/4 of Sec 7, Twp 53, Range 19, W5  
Near Marlboro  
West of Edson

CLIENT: SUNDANCE RECREATIONS  
P.O. Box 6422  
EDSON, Alberta  
T7E 1T8

### INTRODUCTION

This report presents the results of the subsurface investigation conducted at the site of the proposed acreage subdivision located in the Southeast quarter of Section 7, Township 53, Range 19, West of the Fifth Meridian near Edson, Alberta. The objectives of the investigation were to establish the subsoil data necessary for use in the design and construction aspects of the proposed subdivision.

Authorization to proceed was received from Mr. Pat Barker of Walker Consulting Group. Fieldwork was completed during May of 1995.



## **SITE DESCRIPTION**

The proposed residential development is situated in SE 7-53-19-5, approximately 24 km west of Edson, Alberta. The study areas encompasses 150 acres. It is understood that this site will be subdivided into 21 acreage lots and serviced from the existing N-S road allowance by a single road loop. The subject property lies immediately west of the existing Miller Lakes acreage subdivision. Highway 16 is located approximately 1/2 km south of the site.

The eastern 3/4 portion of the subject property lies within a slightly undulating landscape inhabited by a moderate cover of native poplar and spruce forest. The surfacial drainage is not well defined although it does appear that overall topographic relief falls gently in a northwesterly direction. Of note is the presence of a localized depression at approximately the midpoint of the property N-S, centered on the east boundary. The depression lies an estimated 4 meters in elevation below the surrounding ground surface. Up to 3 meters of vertical relief can be observed throughout the remainder of the slightly irregular poplar/spruce forested area.

Muskeg occupies the western 1/4 portion of the proposed subdivision. The transition from the forest to the muskeg areas is clearly defined in the field by a sharp ledge descending sharply an estimated 4 to 5 meters in elevation. The muskeg is inherently wet with areas of open bog. A number of proposed lots within the southwest quadrant of the development extend beyond the eastern limit of the muskeg. Several lots adjoin an environmental reserve situated at the southwest corner of the noted quarter section.

## **FIELD INVESTIGATION**

The field investigation for this project was performed on May 24, 1995. A testhole drilling program was implemented utilizing a 250 diameter continuous flight, solid stem auger mounted on a rubber tired backhoe excavator. The drilling depth of each testhole was limited to 3.0 meters. The testhole drilling program was supplemented by percolation testing. Percolation holes were placed adjacent to each testhole. These holes were hand augered to diameters and depths of 200mm and 900mm respectively.

A total of 10 locations were drilled and tested for percolation rates. The test locations are illustrated on the attached site plan. The locations were chosen on the basis of site access and where disturbance to the area would be limited. Testholes 95-1, 95-2, 95-6, and 95-7

.../3

located within existing cutline clearings. Testhole 95-6 was purposely placed at the low point of a local depression. Recognizing (from earlier drilling) that water tables were more than 3.0 meters below the ground surface), it was felt that a testhole at this location would help determine the depth of watertable throughout the study area. Testholes 95-4 and 95-9 were located within a trail which parallels the noted muskeg ledge. All remaining testholes were accessed by winding through less density populated portions of forest.

A continuous visual log of the soils encountered was maintained in the field during the drilling operation. Noted was organic cover, soil classifications, changes in soil profile, moisture conditions, relative grainsize, color, and any other pertinent observations. Soil samples were removed from the auger at depth intervals of 0.6m, 1.2m, 1.8m and 3.0m. Each sample was tested for moisture content. Selected samples were further tested for grainsize distribution using the hydrometer and mechanical sieve methods. Atterberg limit tests were performed on one sample removed from Testhole 95-6 where soil conditions appeared cohesive. Due to granular conditions throughout, no other Atterberg limit testing was performed. It was originally intended to cover each testhole (once drilled) for future water table measuring. Due to the nature of the soils encountered, it was deemed that water levels would have stabilized almost immediately upon drilling. The driller was, therefore, authorized to backfill the testholes on the day following drilling. Percolation testing was performed following the testhole drilling program. Land Use Branch, Alberta Environmental Protection, "Interim Guidelines of the Evaluation of Water Table Conditions and Percolation Rate for Unserviced Residential Subdivisions" was used as a reference for percolation testing. All percolation holes were hand augered to depths of approximately 900 mm although sloughing during the soaking and testing periods resulted in a slightly shallower hole. It is noted that rapid dissipation of the initial soak enabled percolation testing to proceed shortly after the drilling program.

### **SUBSURFACE SOIL CONDITIONS**

Refer to the individual testhole logs and grainsize distribution plots for information specific to each test location. In general, a surface mantle of fibrous organic cover was



.../4

encountered at each testhole location. Depths of organic varied from 75mm to 150mm with an average depth of 100mm.

The native inorganic soil deposits encountered to termination depth at all locations (excluding testhole 95-6) were predominately fine to medium grained sands. The mode of deposition is uncertain at this time. Given the proximity to an existing creek to the west and transitional soil profile encountered, it is speculated that the land form may be associated with a terrace of fluvial outwash deposits. The sands, in all testholes where encountered, exhibited some silt to silty conditions throughout the upper 1.2 to 1.8 meters. Fines contents of 15 to 30 percent were noted. The soils below this depth were notably cleaner, exhibiting fines contents of less than 5 percent. It was also noted that grainsize distribution was coarsest closest to the muskeg where some small gravel sizes were encountered. Sand sizes were typically uniform with the majority of grainsizes ranging from 0.63mm to 0.16mm in nominal size. As such, the sands are of fine to medium grainsize and of poor gradation. In all cases, the sands were damp to moist and in a medium dense state.

A continuous deposit of silt was encountered at testhole 95-6. The silt was moist and of firm to soft consistency. Some moisture was emanating from a thin frozen zone approximately 1.4 meters below the ground surface. The testhole had filled to this level with water by the end of the drilling program.

No groundwater or evidence of groundwater was encountered within the sand subsoils. It is the writer's experience that groundwater accumulations will have materialized particularly where sand conditions are clean and free draining. Further, no evidence of increased moisture within the sand soils was noted as is normally the case where cyclic (or seasonal) high groundwater leave behind residual moisture. As such, it is the opinion of the writer that the general groundwater table is controlled by the muskeg and remains more than 3.0 meters below the ground surface (at all locations outside the localized depression).

Results of the percolation tests reveal rapid infiltration rates with exception to Testhole 95-6. All percolation rates were less than 5 min./2.5 cm and, in the locations of Testhole 95-1 and 95-4, less than 1 min./2.5 cm. These rapid draw down rates are as expected given the granular characteristics of the subsoils throughout this site. Exception was noted at Testhole location 95-6 where an average percolation rate of 27 min./2.5 mm was measured.

## **RECOMMENDATIONS**

It is understood that all acreage lots proposed for this development will contain an area of at least one acre of land above and beyond the muskeg terrain inhabiting the western portions of the subdivision. Outside the localized depression previously noted, the soil conditions encountered throughout the poplar/spruce forest inhabiting most of the site are favourable for standard house foundation construction. The site is considered geotechnically feasible for the intended subdivision. The granular nature of the soils do, however, yield rapid septic field sewage percolation rates and may require alternative disposal methods.

### **A. House Foundations**

The sand subsoils yield adequate bearing capacity for standard house footing foundations. An allowable bearing capacity of at least 150 kPa should be realized. Standard house footing sizes of 450mm width by 150mm depth should be adequate for most houses constructed throughout the site. All footings should be provided with a cover of at least 1.5 meters as measured from the bottom of footing to the top of the adjacent ground surface. This will provide adequate frost protection.

Due to the potential of sloughing conditions, basement excavations should be cut back, from the vertical, at least 45°. No loose, slough, or excessively disturbed soils should remain at footing elevation. It is advised that hand cleaning be performed where an acceptable surface not be prepared by mechanical equipment. Footing excavations should be protected from drying, rain, snow, freezing and the ingress of surface water. It is recommended that floor joists and basement slabs be placed prior to backfilling the excavation in order to minimize any detrimental effects on the foundation walls caused by backfilling operations. Positive drainage away from all house foundations should be provided. This will require a positive lot grading of at least 5 percent. A splash pad or permanent downspout extension should carry water from the roof leaders at least 1.5m away from the house.

**B. Sewage Disposal**

Percolation tests performed throughout all developable portions of the subdivision exhibited rapid dissipation rates, all of which were less than 5 min/2.5 cm. It is noted that Alberta Environmental Protection suggests rates of between 5 min/2.5 cm and 60 min/2.5 cm for septic field percolation. Additional environmental study would be required if considering septic field discharge of domestic sewage. As an alternative, holding tanks or an evaporation mound system may be considered. The local branch of Alberta Labor, Gas and Plumbing Division, should be contacted for details regarding the design and installation details of an evaporation mound.

**C. Road Construction**

The sand subsoils encountered throughout this site are considered to be good for the construction of the main access road. The sands do offer good subgrade drainage characteristics. All organic soils should be removed from the road area prior to construction. Where embankment fill is required, the native sands or an imported lean clay or gravel may be considered. All fill should be placed in lifts not exceeding 300mm and recompact to a minimum of 97 percent of the standard proctor density. All embankment side slopes and backslopes should be maintained at grades not steeper than 4H:1V and vegetated as soon as possible to minimize erosion. The standard subgrade preparation will require scarification of the subgrade soils to a depth of 150mm and recompact to a minimum of 100 percent of the standard proctor density at optimum moisture content. Pavement designs can be provided upon request.

**CLOSURE**

This report has been prepared for the exclusive and confidential use of Sundance Recreations and Walker Consulting Group Ltd. Use of this report is limited to the noted residential subdivision only. The recommendations given are based on the subsurface soil conditions encountered during test boring, current construction techniques, and generally accepted engineering practices. No other warranty, expressed or implied, is made. Due to geological randomness of many soils formations, no interpolation of soil



.../7

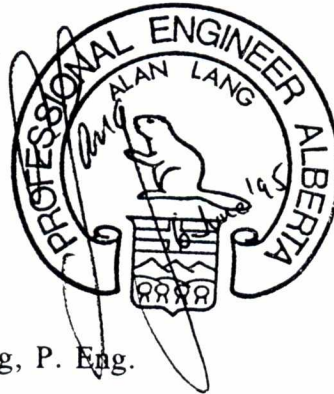
conditions, other than those encountered has been made or implied. Soil conditions are known only at the test boring location. Should other soils be encountered during construction or other information pertinent become available, the recommendations may be altered or modified in writing by the undersigned.

We trust this information is satisfactory. If you should have any further questions, please contact our office.

APPROVED BY

RESPECTIVELY SUBMITTED,  
J.R. PAINE & ASSOCIATES LTD.

<b>PERMIT TO PRACTICE</b> <b>JR PAINE &amp; ASSOCIATES LTD.</b>
Signature <u>R. Stefaniw</u>
Date <u>June 6/95</u>
<b>PERMIT NUMBER: P 401</b>
The Association of Professional Engineers, Geologists and Geophysicists of Alberta



Roman Stefaniw, P. Eng.

Al Lang, P. Eng.


AL/sc/R0211SUN



**APPENDIX A**



SUNIDANCE &  
NOT TO SCALE  
WALKER CON.

 <b>J. R. Paine &amp; Associates Ltd.</b> CONSULTING AND TESTING ENGINEERS	
<b>TESTHOLE LOCATIONS</b> <b>PROPOSED ACREAGE SUBDIVISION</b> <b>SE 7-53-19-5, Near Edson</b>	
Dwn. By	Date <b>May/june '95</b>
Scale	Plate No. <b>1 of 21</b>



Sundance Recreations	Driller: Gideon Contracting Ltd.	TEST HOLE NO: 95-1
Proposed Acreage Subdivision	Equipment: Backhoe-auger attachment	PROJECT NO: 2949-1
PROJECT ENGINEER: A.L.	Method: 250mm dia, Solid stem auger	ELEVATION:

DEPTH (m)	▲ PLASTIC LIMIT ▲			USC	SOIL SYMBOL	SOIL DESCRIPTION	ADDITIONAL COMMENTS	DEPTH (ft)	
	10	20	30						40
	■ LIQUID LIMIT ■								40
	PLASTIC	M.C.	LIQUID						
0.0						Fibrous Organic Cover		0.0	
						75mm SAND; some silt, moist, brown, medium grained, some coal		1.0	
							- Hydrometer Grainsize Analysis, Plate 12	2.0	
1.0				SM				3.0	
								4.0	
								5.0	
								6.0	
2.0				SP		1.8m SAND; damp to moist, fine grained, clean		7.0	
								8.0	
								9.0	
								10.0	
3.0				SP		2.7m SAND; damp to moist, coarse, some pea gravel, clean		11.0	
								12.0	
								13.0	
						3.0m END OF TESTHOLE Testhole dry upon completion.	- Sieve Grainsize Analysis, Plate 13	10.0	
								11.0	
						Side of ridge, 112m S. of int. of cutlines, moderate cover of poplar to 300mm dia.	Field Percolation Test, Refer to Plate 21 for test results.	12.0	
4.0								13.0	

J.R. PAINE & ASSOCIATES  
Edmonton, Alberta

LOGGED BY:  
REVIEWED BY: A.L.  
Fig. No: 2 of 21

COMPLETION DEPTH: 3.0 m  
COMPLETE: 05/24/95



DEPTH (m)	▲ PLASTIC LIMIT ▲ 10 20 30 40 ■ LIQUID LIMIT ■ 10 20 30 40 PLASTIC      M.C.      LIQUID 	USC	SOIL SYMBOL	SOIL DESCRIPTION	ADDITIONAL COMMENTS	DEPTH (ft)
-----------	--	-----	-------------	------------------	---------------------	------------

0.0				Fibrous Organic Cover		0.0
1.0	●	SM	100mm	SAND; some silt, moist, brown, fine to med grained, trace of coal		1.0
2.0	●	SP	1.5m	SAND; moist, med grained, coal, brown-grey		5.0
3.0	●	SP	1.8m	SAND; damp to moist, fine grained, clean		8.0
4.0	●	SP	2.7m	SAND; damp to moist, med to coarse grained clean		9.0
5.0			3.0m	END OF TESTHOLE Testhole dry upon completion.		10.0
6.0				Moderate spruce cover to 350mm dia., some poplar.	Field Percolation Test, Refer to Plate 21 for test results.	12.0
7.0						13.0

95/08/08 11:56AM

Sundance Recreations	Driller: Gideon Contracting Ltd.	TEST HOLE NO: 95-3
Proposed Acreage Subdivision	Equipment: Backhoe-auger attachment	PROJECT NO: 2949-1
PROJECT ENGINEER: A.L.	Method: 250mm dia, Solid stem auger	ELEVATION:

DEPTH (m)	▲ PLASTIC LIMIT ▲			USC	SOIL SYMBOL	SOIL DESCRIPTION	ADDITIONAL COMMENTS	DEPTH (ft)
	10	20	30					
	■ LIQUID LIMIT ■							
	10	20	30	40				
	PLASTIC			M.C.	LIQUID			
	10	20	30	40				
0.0						Fibrous Organic Cover		0.0
						100mm		
						SAND; silty, moist, brown, fine grained		1.0
					SM		- Hydrometer Grainsize Analysis, Plate 14	2.0
						- weathered coal seam intermixed @ 0.9m		3.0
1.0						1.1m		4.0
					SP	SAND; moist, med grained, brown, trace of silt		4.0
						1.5m		5.0
						SAND; damp to moist, med to coarse grained		6.0
2.0								7.0
					SP			8.0
						clean		9.0
3.0								10.0
						3.0m		11.0
						END OF TESTHOLE		12.0
						Testhole dry upon completion.		13.0
						Located at edge of ridge descending sharply to the north approx. 4-5m in elev. Sparse to moderate cover of mature poplar to 450mm dia.	Field Percolation Test, Refer to Plate 21 for test results.	

J.R. PAINE & ASSOCIATES  
Edmonton, Alberta

LOGGED BY:	COMPLETION DEPTH: 3.0 m
REVIEWED BY: A.L.	COMPLETE: 05/24/95
Fig. No: 4 of 21	Page 1 of 1



Sundance Recreations	Driller: Gideon Contracting Ltd.	TEST HOLE NO: 95-4
Proposed Acreage Subdivision	Equipment: Backhoe-auger attachment	PROJECT NO: 2949-1
PROJECT ENGINEER: A.L.	Method: 250mm dia, Solid stem auger	ELEVATION:

SAMPLE TYPE		USC		SOIL SYMBOL		SOIL DESCRIPTION		ADDITIONAL COMMENTS		DEPTH (ft)	
DEPTH (m)	▲ PLASTIC LIMIT ▲	10	20	30	40	USC	SOIL SYMBOL	SOIL DESCRIPTION	ADDITIONAL COMMENTS	DEPTH (ft)	
	■ LIQUID LIMIT ■	10	20	30	40						
	PLASTIC	M.C.	LIQUID								
		10	20	30	40						
0.0								Fibrous Organic Cover		0.0	
						SM		100mm SAND; silty, moist, brown, fine grained some coal		1.0	
								0.6m		2.0	
1.0						SP-SM		SAND; moist, med grained, brown, trace of silt	- Sieve Grainsize Analysis, Plate 15	3.0	
								1.5m		4.0	
								SAND; damp to moist, medium grained		5.0	
2.0						SP				6.0	
										7.0	
								clean		8.0	
										9.0	
3.0										10.0	
								3.0m END OF TESTHOLE Testhole dry upon completion.		11.0	
								Located at western-most point of ridge. Moderate cover of spruce & poplar mix	Field Percolation Test, Refer to Plate 21 for test results.	12.0	
4.0										13.0	

J.R. PAINE & ASSOCIATES  
Edmonton, Alberta

LOGGED BY:	COMPLETION DEPTH: 3.0 m
REVIEWED BY: A.L.	COMPLETE: 05/24/95
Fig. No: 5 of 21	Page 1 of 1



Sundance Recreations  
Schedule "A"

M.D. 94  
Driller: Gideon Contracting Ltd.

Bylaw No. 27.95  
TEST HOLE NO: 95-5

Proposed Acreage Subdivision

Equipment: Backhoe-auger attachment

PROJECT NO: 2949-1

PROJECT ENGINEER: A.L.

Method: 250mm dia, Solid stem auger

ELEVATION:

SAMPLE TYPE

DEPTH (m)	▲ PLASTIC LIMIT ▲			USC	SOIL SYMBOL	SOIL DESCRIPTION	ADDITIONAL COMMENTS	DEPTH (ft)
	10	20	30					
	■ LIQUID LIMIT ■							
	10	20	30	40				
	PLASTIC			M.C.	LIQUID			
	10	20	30	40				
0.0						Fibrous Organic Cover		0.0
						100mm		
						SAND; gravelly, trace of silt, damp, med. to coarse grained, grey-brown		1.0
							- Hydrometer Grainsize Analysis, Plate 16	2.0
1.0					SP-SM			3.0
								4.0
								5.0
						1.5m		6.0
2.0					SP	SAND; damp to moist, medium grained		7.0
								8.0
								9.0
						clean, grey-brown		10.0
3.0								11.0
						3.0m		12.0
						END OF TESTHOLE		13.0
						Testhole dry upon completion.		
						Some marginal frost @ 1.2-1.5m		
						Near top edge of ridge descending moderately to the north. Moderate cover of spruce & poplar mix.	Field Percolation Test, Refer to Plate 21 for test results.	

J.R. PAINE & ASSOCIATES  
Edmonton, Alberta

LOGGED BY:  
REVIEWED BY: A.L.  
Fig. No: 6 of 21

COMPLETION DEPTH: 3.0 m  
COMPLETE: 05/24/95

Sundance Recreations	Driller: Gideon Contracting Ltd.	TEST HOLE NO: 95-6
Proposed Acreage Subdivision	Equipment: Backhoe-auger attachment	PROJECT NO: 2949-1
PROJECT ENGINEER: A.L.	Method: 250mm dia, Solid stem auger	ELEVATION:

DEPTH (m)	▲ PLASTIC LIMIT ▲			USC	SOIL SYMBOL	SOIL DESCRIPTION	ADDITIONAL COMMENTS	DEPTH (ft)
	10	20	30					
	■ LIQUID LIMIT ■							
	10	20	30	40				
	PLASTIC		M.C.	LIQUID				
	10	20	30	40				
0.0						Fibrous Organic Cover		0.0
						150mm		
						SILT; brown, moist, some sand, trace of clay, firm to soft, slow seepage @ 1.2m	- Hydrometer Grainsize Analysis, Plate 17	1.0
1.0								2.0
								3.0
								4.0
								5.0
								6.0
2.0								7.0
								8.0
								9.0
3.0								10.0
								11.0
								12.0
								13.0
4.0								

3.0m  
**END OF TESTHOLE**  
 Testhole dry upon completion.  
 Some marginal frost @ 1.2m.  
 Located in localized depression approx.  
 4.0m in elevation below surrounding  
 landscape. Willow, spruce, and poplar mix

Field Percolation Test,  
 Refer to Plate 21 for test  
 results.

**J.R. PAINE & ASSOCIATES**  
 Edmonton, Alberta

LOGGED BY:	COMPLETION DEPTH: 3.0 m
REVIEWED BY: A.L.	COMPLETE: 05/24/95
Fig. No: 7 of 21	Page 1 of 1

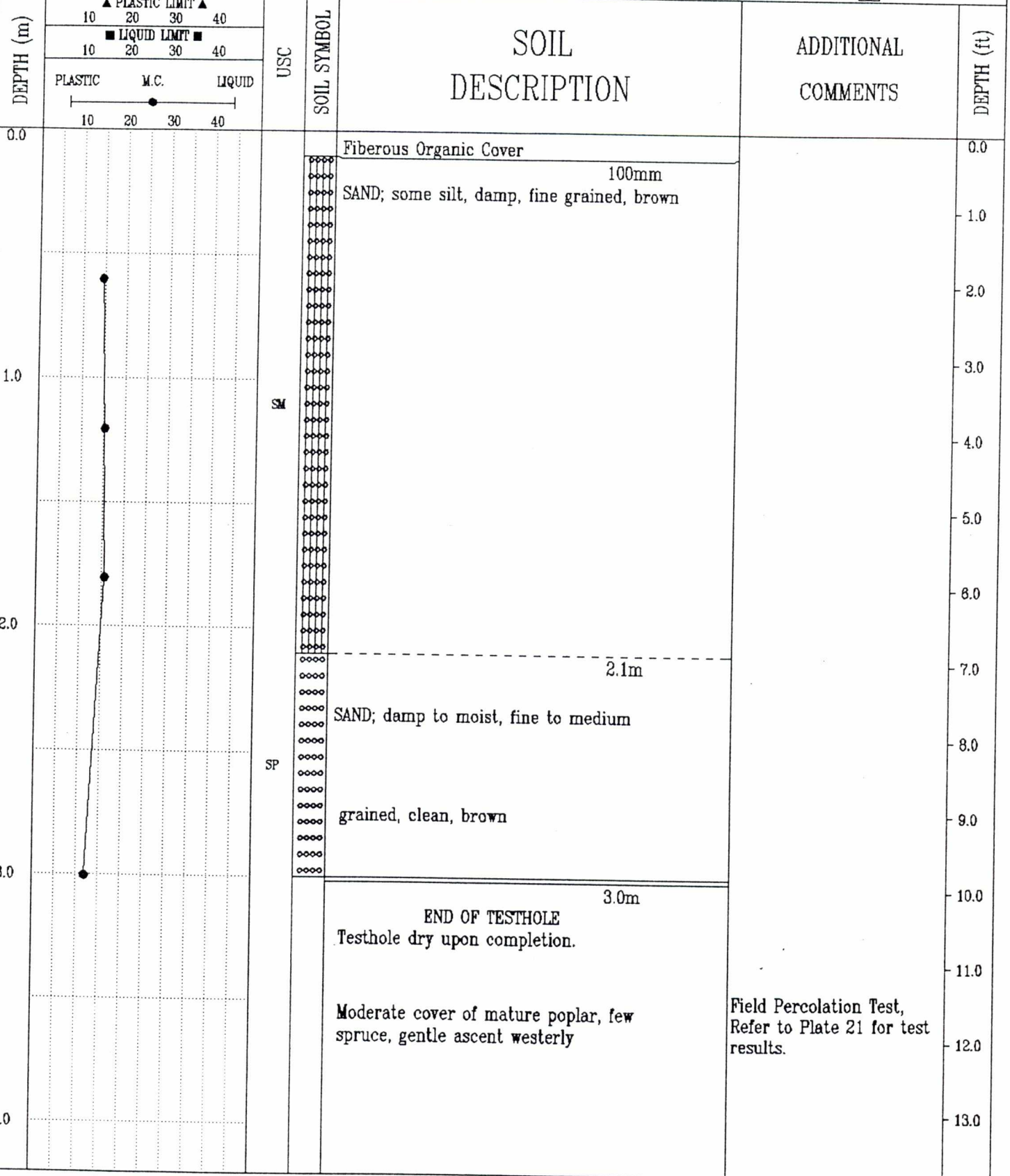
DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	ADDITIONAL COMMENTS	DEPTH (ft)
0.0			Fibrous Organic Cover		0.0
			100mm		
			SAND; some silt, damp to moist, fine to medium grained, brown, some coal		1.0
	SM			- Hydrometer Grainsize Analysis, Plate 18	2.0
					3.0
			1.2m		4.0
					5.0
			SAND; damp to moist, fine grained		6.0
	SP				7.0
					8.0
			clean, brown, trace of coal		9.0
					10.0
			3.0m		11.0
			END OF TESTHOLE Testhole dry upon completion.		12.0
			Slightly uneven topography, moderate poplar cover to 250mm dia. few spruce intermixed	Field Percolation Test, Refer to Plate 21 for test results.	13.0

**J.R. PAINE & ASSOCIATES**  
Edmonton, Alberta

LOGGED BY:	COMPLETION DEPTH: 3.0 m
REVIEWED BY: A.L.	COMPLETE: 05/24/95
Fig. No: 8 of 21	Page 1 of 1



Sundance Recreations	M.D. 94	Driller: Gideon Contracting Ltd.	Bylaw No. 27.95
Proposed Acreage Subdivision		Equipment: Backhoe-auger attachment	TEST HOLE NO: 95-8
PROJECT ENGINEER: A.L.		Method: 250mm dia, Solid stem auger	PROJECT NO: 2949-1
SAMPLE TYPE			ELEVATION:



J.R. PAINE & ASSOCIATES  
Edmonton, Alberta

LOGGED BY:	COMPLETION DEPTH: 3.0 m
REVIEWED BY: A.L.	COMPLETE: 05/24/95
Fig. No: 9 of 21	Page 1 of 1

Proposed Acreage Subdivision

Equipment: Backhoe-auger attachment

PROJECT NO: 2949-1

PROJECT ENGINEER: A.L.

Method: 250mm dia, Solid stem auger

ELEVATION:

SAMPLE TYPE

DEPTH (m)	▲ PLASTIC LIMIT ▲			USC	SOIL SYMBOL	SOIL DESCRIPTION	ADDITIONAL COMMENTS	DEPTH (ft)
	10	20	30					
	■ LIQUID LIMIT ■							
	10	20	30	40				
	PLASTIC		M.C.	LIQUID				
	10	20	30	40				
0.0						Fibrous Organic Cover		0.0
						100mm SAND; some silt, damp, fine grained, brown		1.0
1.0								2.0
								3.0
								4.0
								5.0
								6.0
2.0								7.0
								8.0
								9.0
								10.0
3.0						2.4m SAND; damp to moist, fine to medium grained, clean, brown		11.0
								12.0
								13.0
4.0						3.0m END OF TESTHOLE Testhole dry upon completion.  Dense cover of young spruce	Field Percolation Test, Refer to Plate 21 for test results.	

J.R. PAINE & ASSOCIATES  
Edmonton, Alberta

LOGGED BY:	COMPLETION DEPTH: 3.0 m
REVIEWED BY: A.L.	COMPLETE: 05/24/95
Fig. No: 10 of 21	Page 1 of 1

Proposed Acreage Subdivision

Driller: Gideon Contracting Ltd.

TEST HOLE NO: 95-10

PROJECT ENGINEER: A.L.

Equipment: Backhoe-auger attachment

PROJECT NO: 2949-1

Method: 250mm dia, Solid stem auger

ELEVATION:

SAMPLE TYPE

DEPTH (m)	▲ PLASTIC LIMIT ▲				USC	SOIL SYMBOL	SOIL DESCRIPTION	ADDITIONAL COMMENTS	DEPTH (ft)
	10	20	30	40					
	■ LIQUID LIMIT ■								
	10	20	30	40					
	PLASTIC		M.C.	LIQUID					
	-----								
	10	20	30	40					
0.0							Fibrous Organic Cover		0.0
							75mm		
							SAND; some silt, moist, brown, medium grained		1.0
								- Hydrometer Grainsize Analysis, Plate 19	2.0
1.0					SM				3.0
									4.0
									5.0
									6.0
2.0									7.0
							2.1m		
							SAND; damp to moist, medium grained, clean brown		8.0
					SP				9.0
									10.0
3.0								- Sieve Grainsize Analysis, Plate 20	11.0
							3.0m		12.0
							END OF TESTHOLE		13.0
							Testhole dry upon completion.		
							Relatively flat, young cover of willow and poplar growth	Field Percolation Test, Refer to Plate 21 for test results.	

J.R. PAINE & ASSOCIATES  
Edmonton, Alberta

LOGGED BY:

COMPLETION DEPTH: 3.0 m

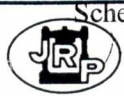
REVIEWED BY: A.L.

COMPLETE: 05/24/95

Fig. No: 11 of 21

Page 1 of 1



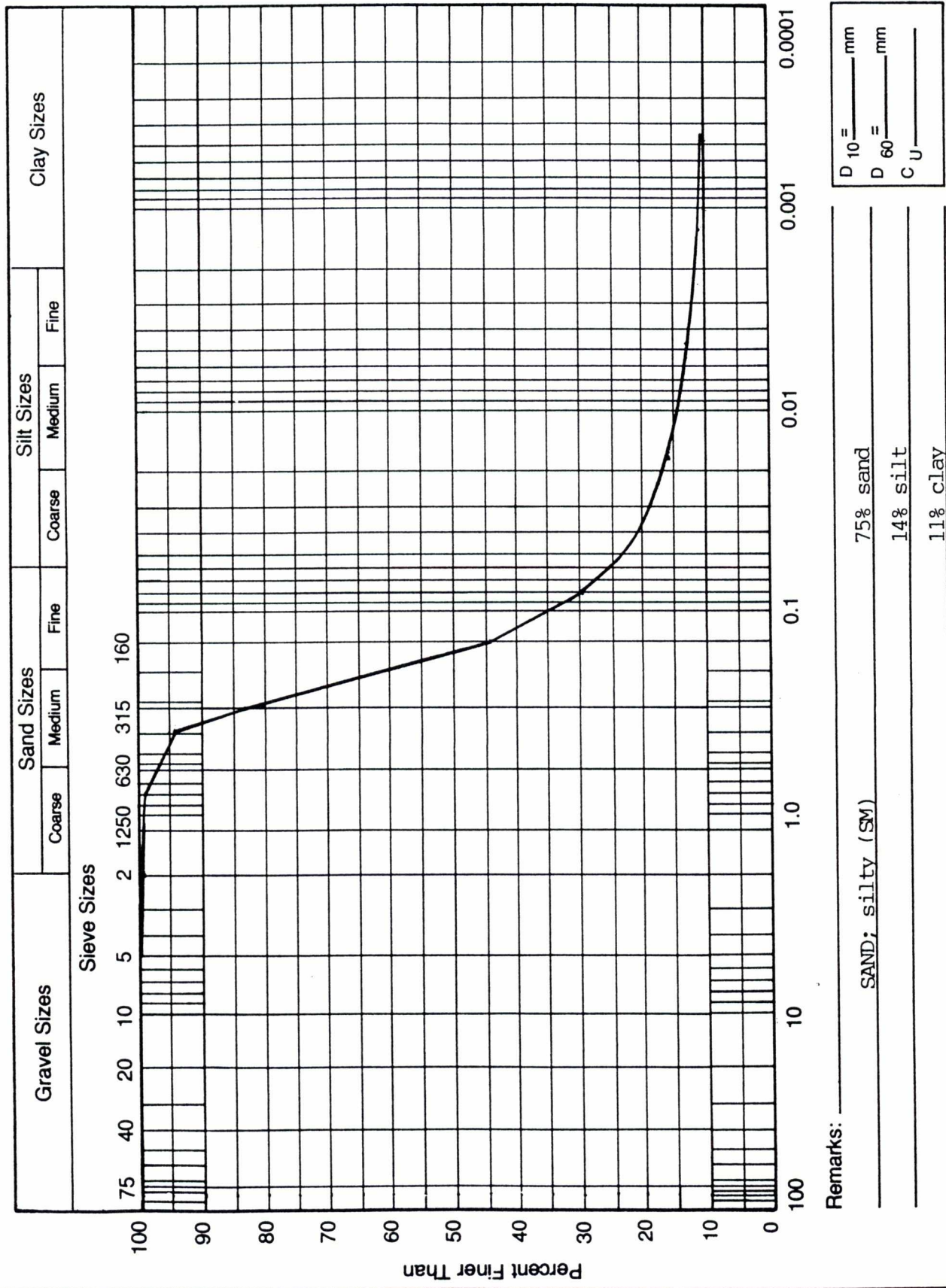


J. R. Paine & Associates Ltd.  
CONSULTING AND TESTING ENGINEERS

SIZE CURVE

Client: SUNDANCE RECREATIONS  
Project: PROPOSED ACREAGE SUBDIVISION  
Made by: GB Job No. 2949-1  
Ck'd by: AL Date: May/June, 1995

Sample: Depth: 0.6m  
Location: Testhole 95-1



D<sub>10</sub> = \_\_\_\_\_ mm  
 D<sub>60</sub> = \_\_\_\_\_ mm  
 C<sub>u</sub> = \_\_\_\_\_

Remarks: SAND: silty (SM) 75% sand  
 14% silt  
 11% clay  
 Grain Size - Millimetres







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CONSULTING AND TESTING ENGINEERS

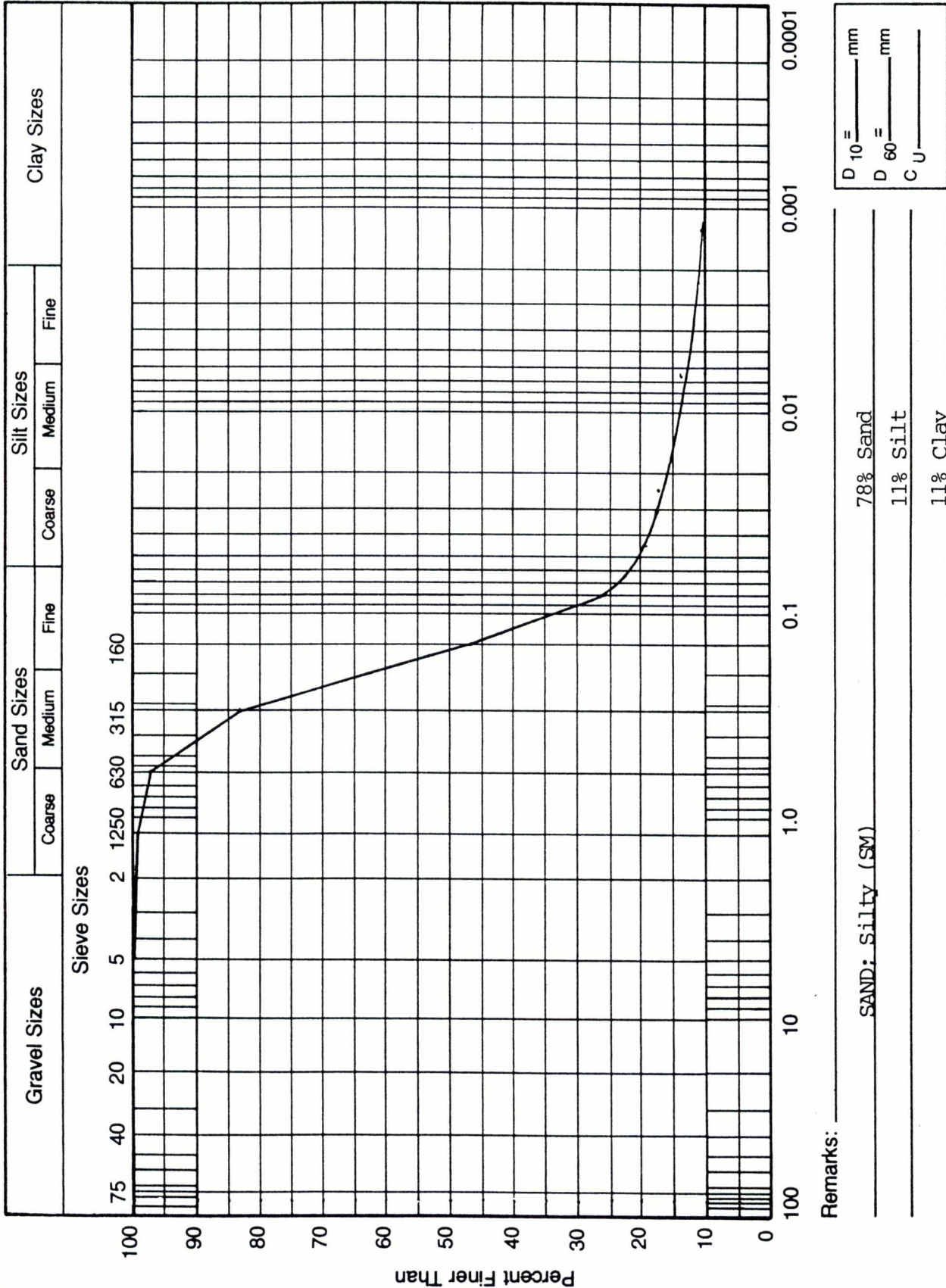
U SIZE CURVE

Client: SUNDANCE RECREATIONS

Sample: ..... Depth: 0.6m ..... Project: PROPOSED ACREAGE SUBDIVISION

Location: Testhole 95-3 ..... Made by: GB Job No. 2949-1

Ck'd by: AL Date: May/June, 1995





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CONSULTING AND TESTING ENGINEERS

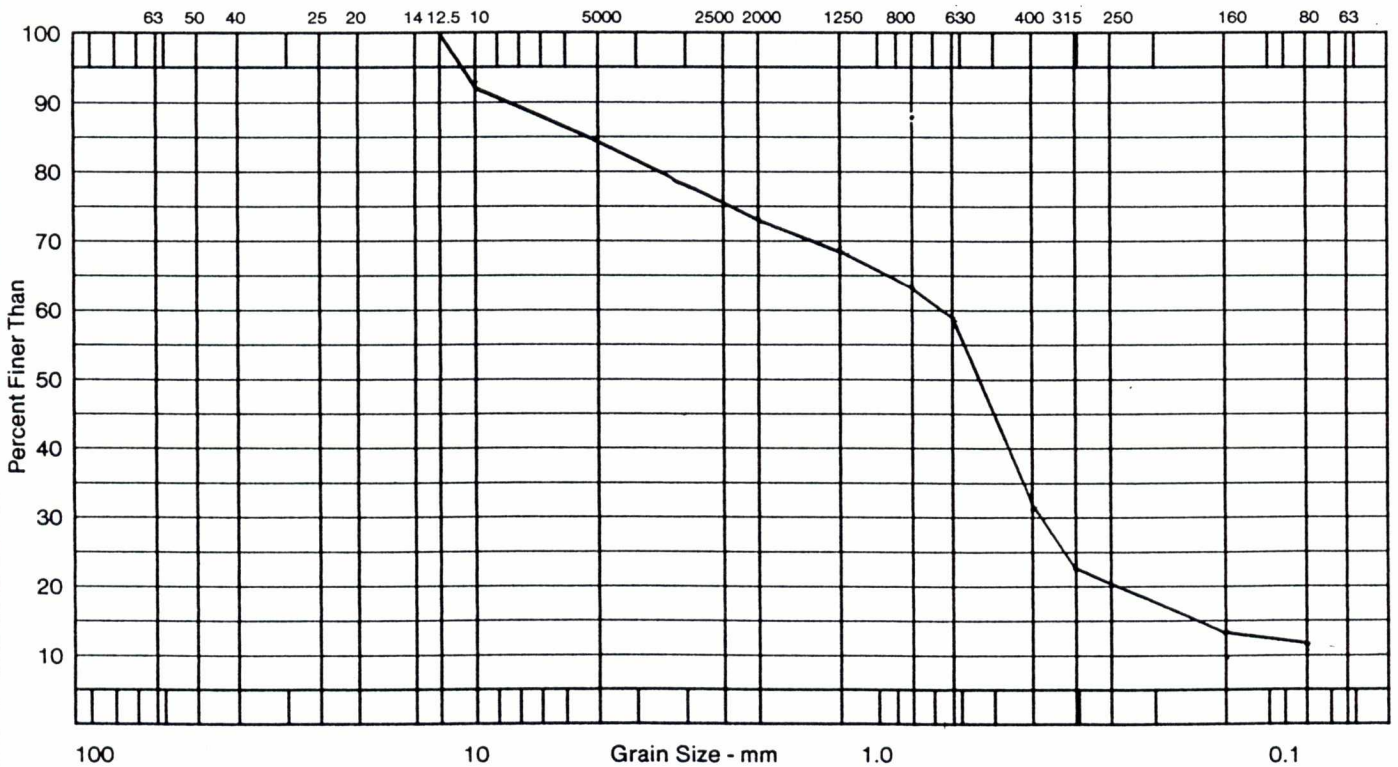
## SCREEN ANALYSIS

Client: SUNDANCE RECREATIONS  
 Sample: \_\_\_\_\_ Depth: 1.2m Project: PROPOSED ACREAGE SUBDIVISION  
 Location: Testhole 95-4 Made by: GB Job No.: 2949-1  
 Ck'd by: AL Date: May/June, 1995

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
50,000	50.0				
40,000	40.0				
25,000	25.0				
20,000	20.0				
12,500	12.5				100
10,000	10.0				92
5,000	5.0				85
2,500	2.5				76
2,000	2.0				73
1,250	1.25				68
800	0.800				63
630	0.630				59
400	0.400				31
315	0.315				22
160	0.160				13.5
80	0.080				11.7

Description of Sample \_\_\_\_\_  
 \_\_\_\_\_  
SAND; some gravel, trace of  
silt (SP-SM)  
 \_\_\_\_\_  
 Time of Sieving \_\_\_\_\_ Min.

Method of Preparation \_\_\_\_\_ Dry \_\_\_\_\_ Washed x  
 Remarks \_\_\_\_\_  
 \_\_\_\_\_  
Cu = 13.6  
Cc = 4.2  
 \_\_\_\_\_







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CONSULTING AND TESTING ENGINEERS

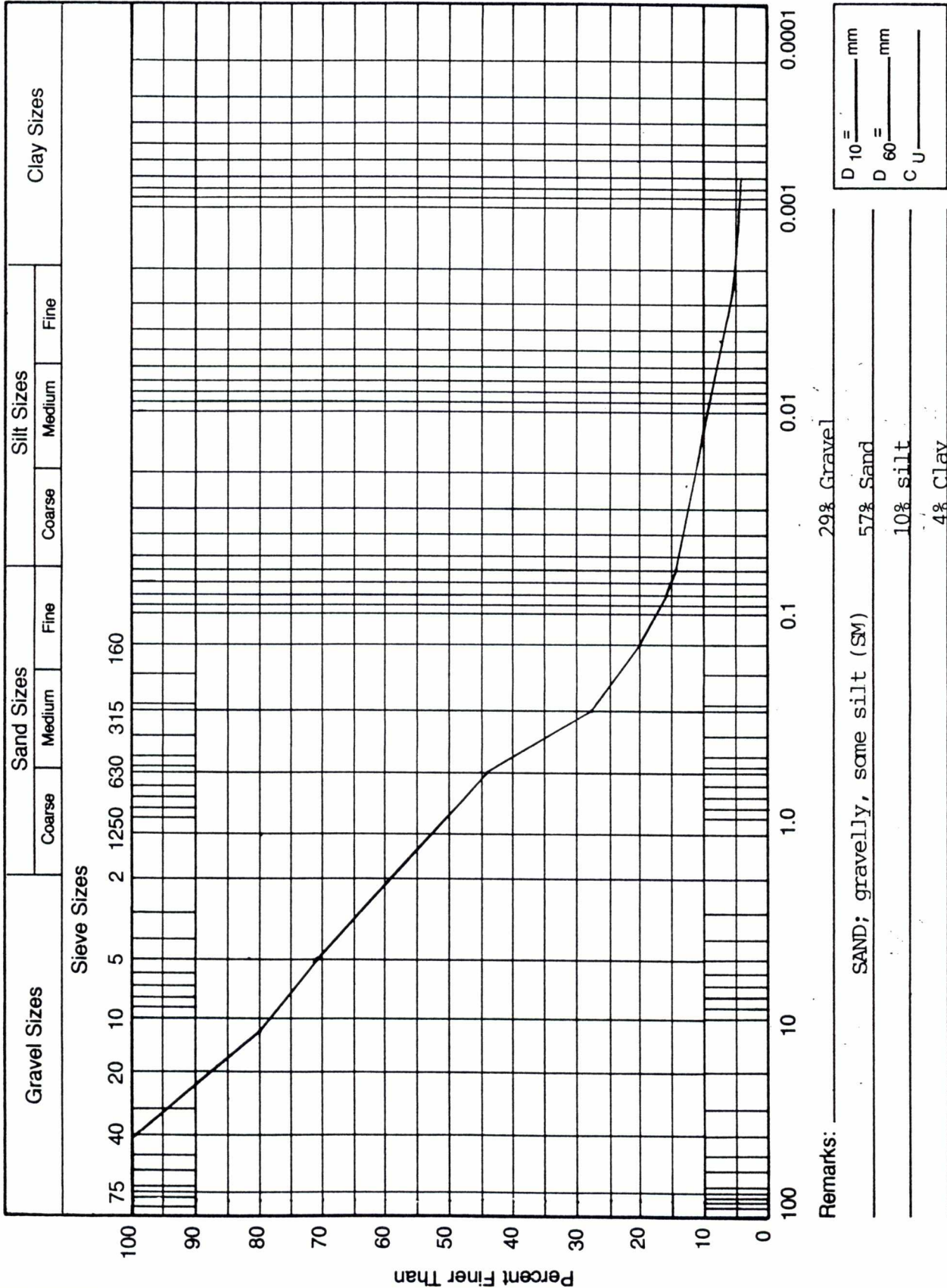
GRAIN SIZE CURVE

Client: SUNDANCE RECREATIONS

Sample: Depth: 0.6m Project: PROPOSED ACREAGE SUBDIVISION

Location: Testhole 95-5 Made by: GB Job No. 2949-1

Ck'd by: AL Date: May/June, 1995





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GRAIN SIZE CURVE

Client: ...SUNDANCE RECREATIONS

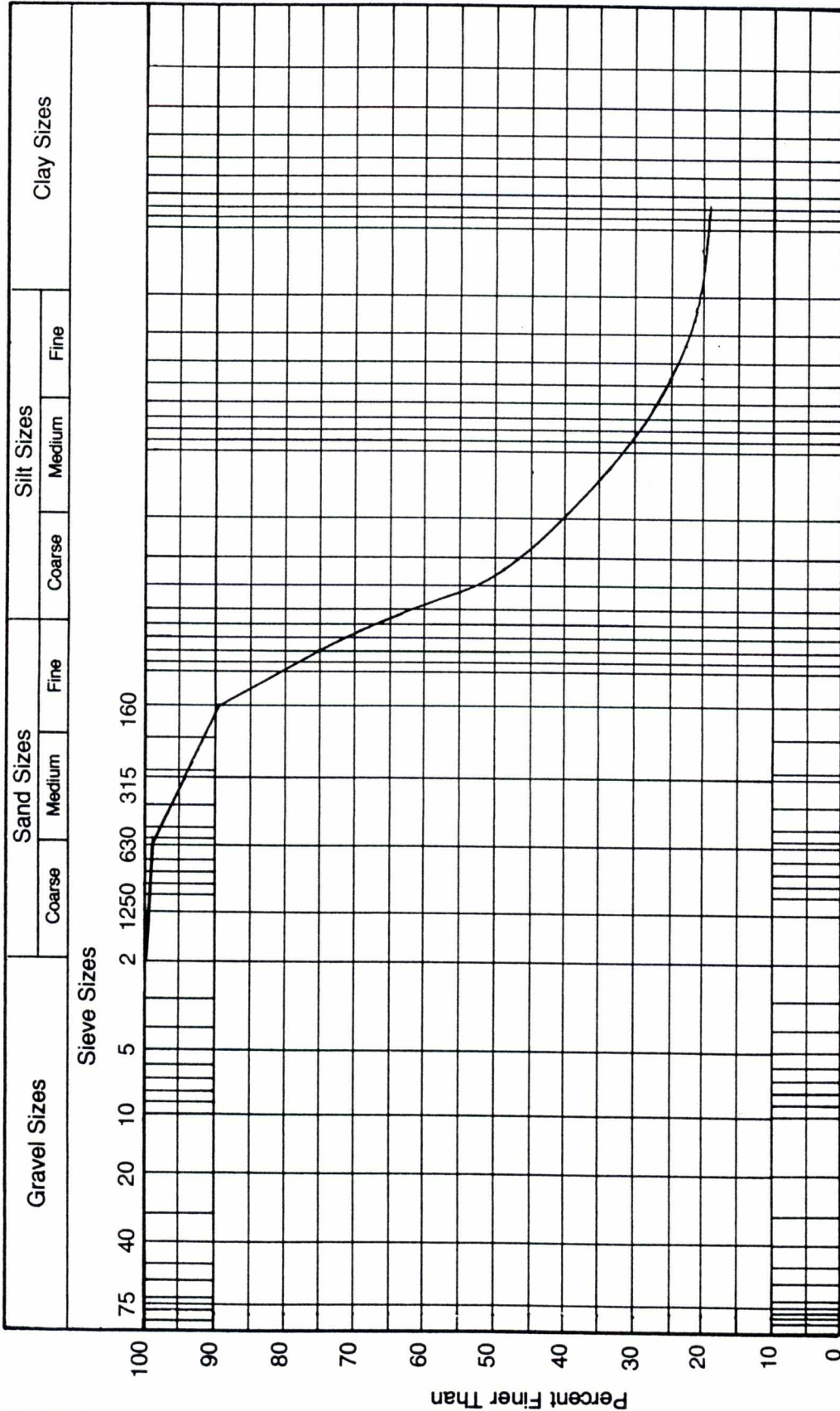
Sample: ..... Depth: 0.6m

Project: PROPOSED ACREAGE SUBDIVISION

Location: Testhole 95-6

Made by: ...GB..... Job No. 2949-1

Ck'd by: ...AL..... Date: May/June, 1995



D <sub>10</sub>	=	_____	mm
D <sub>60</sub>	=	_____	mm
C <sub>u</sub>	=	_____	

Remarks: \_\_\_\_\_

SILT: some clay, some sand (ML)      34% Sand

\_\_\_\_\_      45% Silt

\_\_\_\_\_      21% Clay

Grain Size - Millimetres





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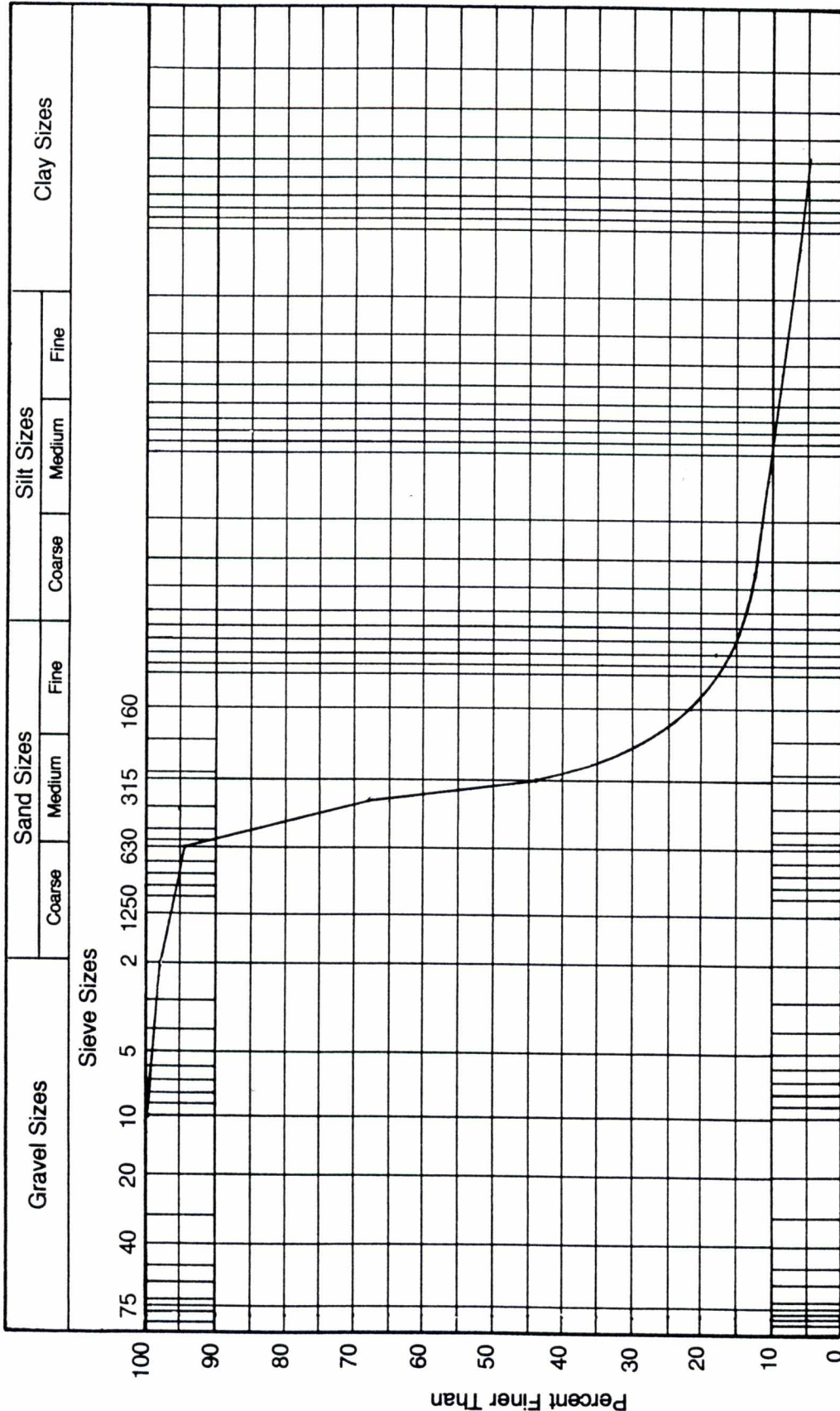
GRAIN SIZE CURVE

Client: .....SUNDANCE RECREATIONS.....

Sample: ..... Depth: .....0.6m..... Project: ..... PROPOSED ACREAGE SUBDIVISION.....

Location: ..... Testhole 95-7..... Made by: ..... GB..... Job No. ....2949-1.....

..... Ck'd by: ..... AL..... Date: ..... May/June, 1995.....



D 10 = \_\_\_\_\_ mm  
 D 60 = \_\_\_\_\_ mm  
 C U = \_\_\_\_\_

Remarks: \_\_\_\_\_  
 \_\_\_\_\_ SAND: Some silt (SM)  
 \_\_\_\_\_ 86% sand  
 \_\_\_\_\_ 8% silt  
 \_\_\_\_\_ 6% clay

Grain Size - Millimetres







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## SCREEN ANALYSIS

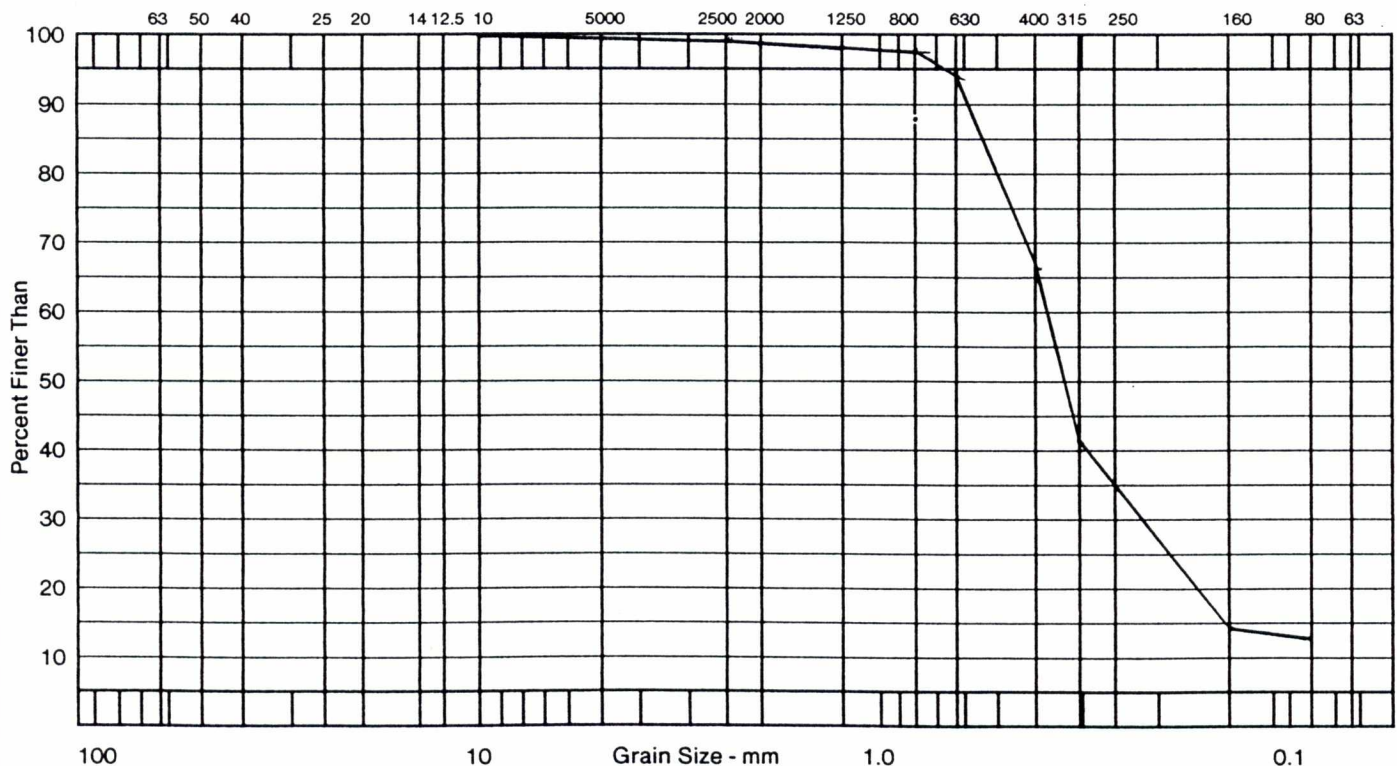
Client: SUNDANCE RECREATIONS  
 Sample: \_\_\_\_\_ Depth: 1.8m Project: PROPOSED ACREAGE SUBDIVISION  
 Location: Testhole 95-10 Made by: GB Job No.: 2949-1  
 Ck'd by: AL Date: May/June, 1995

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
50,000	50.0				
40,000	40.0				
25,000	25.0				
20,000	20.0				
12,500	12.5				
10,000	10.0				
5,000	5.0				99.7
2,500	2.5				99
2,000	2.0				99
1,250	1.25				98
800	0.800				97
630	0.630				94
400	0.400				66
315	0.315				41
160	0.160				15
80	0.080				13.0

Description of Sample \_\_\_\_\_  
SAND; silty (SM)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Method of Preparation \_\_\_\_\_ Dry \_\_\_\_\_ Washed x  
 Remarks \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Time of Sieving \_\_\_\_\_ Min. \_\_\_\_\_



**PERCOLATION TEST RESULTS**

Sundance Receptions

May, 1995

TESTHOLE No. 95-1				
Time	Depth to Water (cm)	Elapsed Time (min.)	Drop of Water (cm)	Percolation Rate (min/2.5cm)
15:14	45			
		68	> 40	< 0.7
17:22	dry @ 85			
		n/a	n/a	n/a
n/a	n/a			
		n/a	n/a	n/a
n/a	n/a			
		n/a	n/a	n/a
n/a	n/a			

TESTHOLE No. 95-2				
Time	Depth to Water (cm)	Elapsed Time (min.)	Drop of Water (cm)	Percolation Rate (min/2.5cm)
3:07	45			
		78	28	1.1
4:25	73			
		n/a	n/a	n/a
n/a	dry			
		n/a	n/a	n/a
n/a	n/a			
		n/a	n/a	n/a
n/a	n/a			
		n/a	n/a	n/a
n/a	n/a			avg. = 1.1

TESTHOLE No. 95-3				
Time	Depth to Water (cm)	Elapsed Time (min.)	Drop of Water (cm)	Percolation Rate (min/2.5cm)
15:45	40			
		43	19	0.9
16:28	59			
		22	5	1.8
16:50	64			
		n/a	n/a	n/a
17:30	Dry @ 70			
		n/a	n/a	n/a
n/a	n/a			avg. = 1.4

TESTHOLE No. 95-4				
Time	Depth to Water (cm)	Elapsed Time (min.)	Drop of Water (cm)	Percolation Rate (min/2.5cm)
15:36	40			
		53	> 36	< 0.6
16:29	Dry @ 76			
		n/a	n/a	n/a
n/a	n/a			
		n/a	n/a	n/a
n/a	n/a			
		n/a	n/a	n/a
n/a	n/a			

Schedule "A"

M.D. 94

Bylaw No. 27.95



**PERCOLATION TEST RESULTS**

Sundance Receptions

May, 1995

TESTHOLE No. 95-5				
Time	Depth to Water (cm)	Elapsed Time (min.)	Drop of Water (cm)	Percolation Rate (min/2.5cm)
15:30	36			
		60	10	2.4
16:30	46			
		23	4	2.3
16:53	50			
		39	8	2.0
17:32	58			
		n/a	n/a	n/a
n/a	n/a			avg. = 2.2

TESTHOLE No. 95-6				
Time	Depth to Water (cm)	Elapsed Time (min.)	Drop of Water (cm)	Percolation Rate (min/2.5cm)
15:20	39			
		53	4	5.3
16:13	43			
		63	2	12.6
17:16	45			
		38	1	15.2
17:54	46			
		33	1	13.2
18:27	47			
				avg. = 26.6

TESTHOLE No. 95-7				
Time	Depth to Water (cm)	Elapsed Time (min.)	Drop of Water (cm)	Percolation Rate (min/2.5cm)
15:03	46			
		76	9	3.4
16:19	55			
		26	2	5.0
16:45	57			
		23	6.5	1.4
17:08	63.5			
		n/a	n/a	n/a
17:22	Dry			avg. = 3.3

TESTHOLE No. 95-8				
Time	Depth to Water (cm)	Elapsed Time (min.)	Drop of Water (cm)	Percolation Rate (min/2.5cm)
16:03	44			
		38	17	0.9
16:41	61			
		21	4	2.1
17:02	65			
		40	9	1.8
17:42	74			
		n/a	n/a	n/a
n/a	n/a			avg. = 1.6

**PERCOLATION TEST RESULTS**

Sundance Receptions

May, 1995

TESTHOLE No. 95-9				
Time	Depth to Water (cm)	Elapsed Time (min.)	Drop of Water (cm)	Percolation Rate (min/2.5cm)
15:50	41			
		44	17	1.0
16:34	58			
		61	> 17	< 1.4
17:35	Dry @ 75			
		n/a	n/a	n/a
n/a	n/a			
		n/a	n/a	n/a
n/a	n/a			avg. = 1.0

TESTHOLE No. 95-10				
Time	Depth to Water (cm)	Elapsed Time (min.)	Drop of Water (cm)	Percolation Rate (min/2.5cm)
15:58	35			
		39	15	1.0
16:37	50			
		23	6	1.5
17:00	56			
		39	> 9	< 1.7
17:39	Dry @ 65			
		n/a	n/a	n/a
n/a	n/a			avg. = 1.3

Schedule "A"

M.D. 94

Bylaw No. 27.95