Consulting Engineers / Water Testing Laboratory

5200 Dunbar Drive Wasilla, AK 99654

Phone Fax 907-376-6989 907-373-2157

October 15, 2004

Western Spruce, LLC c/o John Shadrach, RLS PO Box 1497 Wasilla, AK 99687

Re: TP B22, Sec 20, T18N, R1E, S.M.; Proposed Hart Lake Subdivision; Soils Report

Mr. Shadrach.

As you requested, we inspected the excavation of six test pits on the referenced property in June 2004, and 19 additional test pits in August 2004. A test hole location map and copies of our test hole logs are attached, and our findings are summarized below:

Subsurface soils were found to be primarily clean sand and gravel, beneath a surface layer of silt and organics 1 to 3 feet thick. Groundwater was encountered in the test holes #1, #2, #24 & #25 near Hart Lake. Neither groundwater nor impermeable soil were encountered in the other holes.

Our findings are based upon the soil and groundwater conditions observed in the test pits. Conditions appear to be representative of the property. However, differing conditions may be encountered, and groundwater levels can change. Conditions on the majority of the property appear to meet the definition of "Usable Area" for subdivision under Mat-Su Borough requirements, and for installation of conventional onsite septic systems. The northeast corner of the property, near Hart Lake, appears to have groundwater at a depth less than 8 feet, and would thus not meet the definition of usable area.

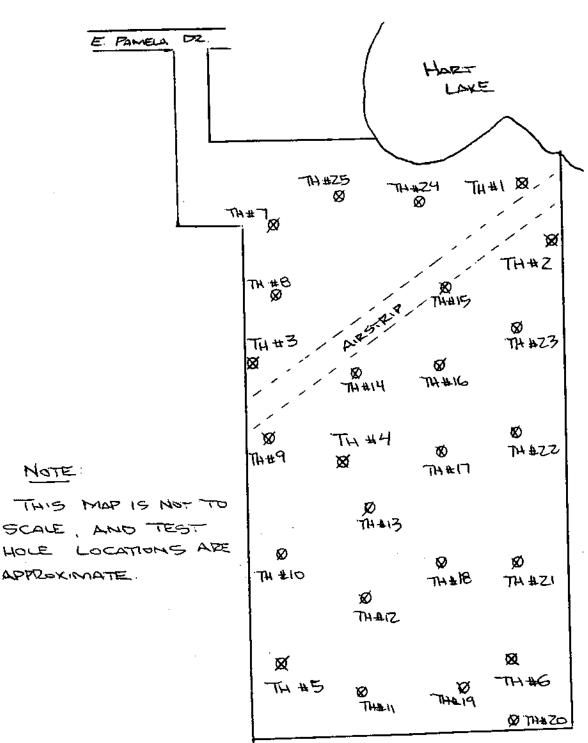
Based upon our investigation, the proposed lots shown on the preliminary plat contain a minimum of 20,000 square feet of usable area as defined by MSB Title 16, with the exception of Lots 1-4 and 7-9, Block 1. These lots will require a variance to usable area requirements, or connection to a public sewer system, unless additional soils investigation can prove that they contain sufficient usable are to meet MSB requirements.

Please call if you have any questions or need additional information.

Sincerely,

Michael R. Erdman, P.E.

cc: Scott Walther



ENGINEERING/WATER TESTING 5200 DUNBAR DRIVE WASILLA. AK 99654 PROPOSED HART LAKE SUBDIVISION

T.P. BZZ, SEC ZO, TIBH, RIE, SM, ALAGKA

B. Soils REPORT - T.H. LOCATIONS

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TEST HOLE # 1

PERFORMED FOR	Western Spruce LLC		SITE PLAN
LEGAL DESCRIPT			
Oepth (Feet)		SEE ATTACHE	ED TEST HOLE LOCATION MAP.
1- // OR	GANICS/SILT		
2 & & & & & & & & & & & & & & & & & & &			
1. 25 SA	ND & GRAVEL (SP/GP) w/ Cobbles.		
5 150	OWA,		
6. (36)			
7-			
8- _ son	ND & GRAVEL (SP/GP) w/ Cobbles, & ne Silt, Gray, Ground water flows freely at 7'.		
9- Boi	ttom of Hole 9 Feet.		
10-			
u.		WAS GROUND WATER ENCOUNTERED?	YES
12-	•	IF YES, AT WHAT	7 Feet
13-		DEPTH?	/ reel
14-			
15-		DEPTH TO WATER AFTER MONITORING?	N/A
16-			
COMMENTS:			
LOGGED BY:	MICHAEL R. ERDMAN, P.E.	DATE	16 JUNE 2004

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TEST HOLE # 2

DEGEOOMED EOD:	Wastern Samura I I C	SITE PLAN	
PERFORMED FOR: LEGAL DESCRIPTION: Depth	Western Spruce LLC TP B22. Sec 20. T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)	SEE ATTACHED TEST HOLE	LOCATION
(Feet)			
organi	CS/SILT		
3- (SAND (S	P/SW)		
	RAVEL (GP) w/ Cobbles Brown with some Mottling		
6- SAND & Brown	: GRAVEL (SP/GP) w/ Cobbles.		
7. 8- SAND &	gRAVEL (SP/GP) w/ Cobbles. &		
some Sil	t. Gray. Ground water flows freely at 8'		
10-	1	WAS GROUND WATER ENCOUNTERED?	YES
12-		F YES, AT WHAT DEPTH?	8 Feet
13-			
15-		DEPTH TO WATER AFTER MONITORING?	N/A
16-			
COMMENTS:			
	<u> </u>	<u> </u>	
LOGGED BY: M	NCHAELR EROMAN PE	DATE: 16 JUNE 2	2004

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TEST HOLE # 3

PERFORMED FOR:	Western Spruce LLC	SITE PLAN
LEGAL DESCRIPTION: Depth (Feet)	TP B22. Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)	SEE ATTACHED TEST HOLE LOCATION MAP.
8- Boulders	P/SW) GRAVEL (SP/GP) w/ Cobbles. &	
9. 10. 11. 12. Bottom o	of Hole 12.5 Feet.	WAS GROUND WATER NO ENCOUNTERED? IF YES, AT WHAT N/A DEPTH?
15-		DEPTH TO WATER N/A AFTER MONITORING?
COMMENTS:		
LOGGED BY MAI	CHAELR FROMAN P.F.	DATE. 16 JUNE 2004

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TEST HOLE # 4

		,		SITE PLAN
PERFORMED FOR:	Western Spruce LLC			
LEGAL DESCRIPTION:	TP B22, Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)		SEE ATTACHE	O TEST HOLE LOCATION
Depth (Feet)				MAP.
1- ORGANIC 2- 3- SAND & 5- 6- 8- SAND &	GRAVEL (SP/GP) w/ Cobbles			
7- 8- 9-				
10- &			ROUND WATER UNTERED?	NO
13-		IF YES DEPTH	, AT WHAT ?	N/A
14- Bottom o	of Hole 14 Feet		TO WATER MONITORING?	N/A
16-				
COMMENTS	·	·		·
LOGGED BY MI	CHAEL R. ERDMAN, P.E.		DATE:	16 JUNE 2004

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TEST HOLE # 5

				SITE PLAN
PERFORMED FOR:	Western Spruce LLC			
LEGAL DESCRIPTION:	TP B22, Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)		SEE ATTACHE	TEST HOLE LOCATION
Depth (Feet)			022777777	MAP.
ORGANE 2- 3- 4- 5- 6- 8- 7-	CS/SILT GRAVEL (SP/GP) w/ Cobbles & al Boulders to 12".			
8 8				
9-				
11-			GROUND WATER UNTERED?	NO
12 Bottom o	of Hole 13 Feet	IF YES DEPTI	S. AT WHAT H?	N/A
15-			H TO WATER R MONITORING?	N/A
16-			•	
COMMENTS:			<u> </u>	<u></u>
LOGGED BY: M	ICHAEL R. ERDMAN, P.E.		DATE:	16 JUNE 2004

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TEST HOLE # 6

PERFORMED FOR:	Western Spruce LLC	<u></u>	SITE PLAN
PERFORMED FOR:	western spruce LLC		
LEGAL DESCRIPTION:	TP B22, Sec 20, T18N, R1E, S.M., Alaska		
Depth (Feet)	(Proposed Hart Lake Subdivision)	SEE ATTACI	HED TEST HOLE LOCATION MAP.
	CS/SILT CGRAVEL (SP/GP) w/ Cobbles & nal Boulders to 12".		
11-		WAS GROUND WATER ENCOUNTERED?	R No
12- Bottom o	of Hole 12.5 Feet	IF YES, AT WHAT DEPTH?	N/A
14-		DEPTH TO WATER AFTER MONITORING?	N/A
16-			
COMMENTS:			
LOGGED BY	ICHAEL R. ERDMAN, P.E.	DATE	16 JUNE 2004

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TEST HOLE #8

PERFORMED FOR:	Western Spruce LLC			SITE PLAN
LEGAL DESCRIPTION	TP B22, Sec 20, T18N, R1E, S.M., (Proposed Hart Lake Subdivision)	Alaska		
Depth (Feet)			SEE ATTACHED	TEST HOLE LOCATION MAP.
t- ORGANIC	CS/SILT			
2 80				
3. O.C.				
4- SAND & Occasiona	GRAVEL (SP/GP) w/ Cobbles & al Boulders to 12".			
6-			1	
7 Sb:				
8			!	
10-			•	
11-			GROUND WATER DUNTERED?	No
12- / 325	(VEL (GM)			
13- 25-		IF YE DEPT	S, AT WHAT TH?	N/A
14- Bottom of	f Hole 13.0 Feet			
15-			TH TO WATER R MONITORING?	N/A
16-				
COMMENTS:				
	- .	· · · · · ·	· · · · · · · · · · · · · · · · · · ·	
LOGGED BY: MIC	CHAEL R. ERDMAN, P.E.		DATE:	11 AUG 2004

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TEST HOLE #9

		· · · · · · · · · · · · · · · · · · ·
PERFORMED FOR:	Western Spruce LLC	SITE PLAN
LEGAL DESCRIPTIO	N: TP B22. Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)	
Depth (Feet)		SEE ATTACHED TEST HOLE LOCATION MAP.
	ANICS/SILT	
3- 2- /1		
) & GRAVEL (SP/GP) w/ Cobbles & sional Boulders to 12".	
5- \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	333233 10 12 :	
6 0		
7 36		
8		
9. 80		
11-		WAS GROUND WATER N₀ ENCOUNTERED?
12-	- (14)- (205	IE VEC ATVANIAT
13-	m of Hale (2.0 Feet	IF YES, AT WHAT N/A DEPTH?
14-		DEPTH TO WATER N/A
15-		DEPTH TO WATER N/A AFTER MONITORING?
ſ 6 -		
COMMENTS:	· · · · · · · · · · · · · · · · · · ·	
_		
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TEST HOLE # 10

PERFORMED FOR:	Western Spruce LLC		SITE PLAN
LEGAL DESCRIPTION:	TP B22, Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)		
Depth (Feet)		SEE ATTACH	ED TEST HOLE LOCATION MAP.
100 1	GRAVEL (SP/GP) w/ Cobbles & all Boulders to 14".		
10 86 .		WAS GROUND WATER ENCOUNTERED?	No .
13- 8-		IF YES, AT WHAT DEPTH?	N/A
15- Bottom o	f Hole 14 Feet	DEPTH TO WATER AFTER MONITORING?	N/A
COMMENTS:		·	· .
		· · · · · · · · · · · · · · · · · · ·	
LOGGED BY: MI	CHAEL R. ERDMAN, P.E.	DATE:	11 AUG 2004

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TEST HOLE # 11

PERFORMED FOR:	Western Spruce LLC			SITE PLAN
LEGAL DESCRIPTION:	TP B22, Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)		SEE ATTACHE	D TEST HOLE LOCATION
Depth (Feet)			OGE /// // OVE	MAP.
ORGANI	ICS/SILT			
4- S SAND & Layers of	. GRAVEL (SP/GP) w/ Cobbles & FClean Sand (SP/SW)			
5-				
6				
7. 8				!
8- -				
9				
10-			ROUND WATER INTERED?	No
12- 130				
13-		IF YES, DEPTH	AT WHAT ?	N/A
Bottom o	of Hole 14 Feet			•
15-			TO WATER MONITORING?	N/A
16-				
COMMENTS				
COMMENTS				
		<u> </u>	<u>-</u>	
LOGGED BY	CHAEL R. ERDMAN. P.E.	<u> </u>	DATE.	11 AUG 2004

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TEST HOLE # 12

		1			
PERFORMED FOR.	Western Spruce LLC			SITE PLAN	 1
LEGAL DESCRIPTION:	TP B22, Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)				
Depth (Feet)			SEE ATTACHE	ED TEST HOLE LOCATION MAP.	NC
ORGANIC					
Sandy GR 3- SAND (S	RAVEL (GP)				ļ
5. 8.					
6- Sand &	GRAVEL (SP/GP) w/ Cobbles				
8 8					:
10-			ROUND WATER	No	
12-			NTERED?	N/A	
Bottom o	of Hole 13 Feet	DEPTH?	AT WHAT	N/A 	
15-			TO WATER MONITORING?	N/A	
16-					
COMMENTS:					
LOGGED BY: MI	CHAEL R. ERDMAN, P.E.		DATE:	11 AUG 2004	

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TEST HOLE # 13

		L		
PERFORMED FOR:	Western Spruce LLC	_		SITE PLAN
LEGAL DESCRIPTION Depth (Feet)	· · · · · · · · · · · · · · · · · · ·		SEE ATTACHE	ED TEST HOLE LOCATION MAP.
2- / B o	ANICS/SILT D & GRAVEL (GP/SP) w/ Cobbles &			:
	D & GRAVEL (GP/SP) w/ Cobbles & sional Boulders to 24".	INAC OF	ACCUME MATER	
11- 12- 13- 14- 15- 16-	om of Hole 14 Feet	ENCOUNT IF YES, A DEPTH?	ROUND WATER NTERED? AT WHAT TO WATER MONITORING?	No N/A N/A
COMMENTS _	· · · · · · · · · · · · · · · · · · ·	·		· .
LOGGED BY:	MICHAEL R. ERDMAN, P.E.		DATE:	11 AUG 2004

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TEST HOLE # 14

PERFORMED FOR:	Western Spruce LLC		SITE PLAN
LEGAL DESCRIPTION: Depth (Feet)	TP B22, Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)	SEE ATTACI	HED TEST HOLE LOCATION MAP.
1- ORGANIC	CS/SIL F		
1- 12-6	GRAVEL (SP/GP) w/ Cobbles &		
	al Boulders to 12".		
7. 7.80	GRAVEL (GP-GM) w/ Cobbles &		
9 80			
11 2		WAS GROUND WATER ENCOUNTERED?	No
13-		IF YES, AT WHAT DEPTH?	N/A
Bottom of	"Hole 14 Feet -	DEPTH TO WATER AFTER MONITORING?	N/A
16-		. •	
COMMENTS:			
LOGGED BY: MIC	CHAEL R. ERDMAN, P.E.	DATE:	11 AUG 2004

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TEST HOLE # 15

PERFORMED FOR:	Western Spruce LLC		SITE PLAN
LEGAL DESCRIPTIO	N. TP B22, Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)		
Depth (Feet)	(1.1. speaked 1. talls battle detection (atom)	SEE ATTACHE	ED TEST HOLE LOCATION MAP.
2- 3- 4- 85 SANG	ANICS/SILT D & GRAVEL (SP/GP) w/ Cobbles & sional Boulders to 30".		
11 8		WAS GROUND WATER ENCOUNTERED?	No
12- 13-	m of Hole 12 Feet	IF YES, AT WHAT DEPTH?	N/A
15-		DEPTH TO WATER AFTER MONITORING?	N/A
COMMENTS.			·
_			
LOGGED BY:	MICHAEL R. ERDMAN. P.E.	DATE:	11 AUG 2004

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TEST HOLE # 16

PERFORMED FOR:	Western Spruce LLC			SITE PLAN
LEGAL DESCRIPTION	TP B22, Sec 20, T18N, R1E, S.M., (Proposed Hart Lake Subdivision)	Alaska		;
Depth (Feet)	•		SEE ATTACHE	D TEST HOLE LOCATION MAP
1- ORG	SANICS/SILT			ļ
2 8				i
3- 2				
	iD & GRAVEL (SP/GP) w/ Combles & assional Boulders to 12".			
6				
7 0				
8 8				
10 0			L	<u></u>
			VAS GROUND WATER ENCOUNTERED?	No
12- B Bott	om of Hole 13 Feet	11	F YES, AT WHAT	N/A
13-	on or note 13 rect		DEPTH?	THE STATE OF THE S
14-			DEPTH TO WATER	N/A
15-		,	AFTER MONITORING?	
COMMENTS.		·		
LOGGED BY:	MOUNT B EDDIAN OF		DATE:	44 AUC 2004
-	MICHAEL R. ERDMAN, P.E.			11 AUG 2004

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TEST HOLE # 17

		i	
PERFORMED FOR:	Western Spruce LLC		SITE PLAN
LEGAL DESCRIPTION:	TP B22, Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)		
Depth (Feet)		SEE ATTACHE	D TEST HOLE LOCATION MAP.
I- ORGAN	ICS/SILT		
3. 80			
Occasion	: GRAVEL (SP/GP) w/ Cobbles & ral Boulders to 12".		
6-			
7 86° 8 89			
10-		WAS GROUND WATER ENCOUNTERED?	No
12		IF YES, AT WHAT	N/A
13- (0)		DEPTH?	
15- Bottom	of Hole 15 Feet	DEPTH TO WATER AFTER MONITORING?	N/A
16-			
COMMENTS:			
LOGGED BY: M	ICHAEL R. ERDMAN, P.E.	DATE:	11 AUG 2004

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TEST HOLE # 18

PERFORMED FOR	Western Spruce LLC		SITE PLAN
LEGAL DESCRIPTION:	TP B22. Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)	SEE ATTAC	HED TEST HOLE LOCATION
(Feet)		JEE ATTACK	MAP.
ORGANI	CS/SILT		
	GRAVEL (SP/GP) w/ Cubbles & al Boulders to 12"		
5-	ai Dolliucis (O 12		
6-			
7- 20			
, &			
10-			
11- 85-		WAS GROUND WATER ENCOUNTERED?	. No
12-		IF YES, AT WHAT DEPTH?	N/A
Bottom o	f Hole 14 Feet	DEPTH TO WATER AFTER MONITORING?	N/A
16-			·
COMMENTS:			
			· · · · · · · · · · · · · · · · · · ·
LOGGED BY: MI	CHAEL R. ERDMAN, P.E.	DATE	13 AUG 2004

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TEST HOLE # 19

PERFORMED FOR	Western Spruce LLC		SITE PLAN
LEGAL DESCRIPTION.	TP B22. Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)		
Depth (Feet)		SEE ATTACH	ED TEST HOLE LOCATION MAP.
ORGANIC 2- 3- 4- SAND &	GRAVEL (SP/GP) w/ Cobbles.		
11- 85		WAS GROUND WATER ENCOUNTERED?	No
13- 13- 13- 13- 13- 13- 13- 13- 13- 13-	• • • • • • • • • • • • • • • • • • • •	IF YES, AT WHAT DEPTH?	N/A
14- Bottom of	Hole 14 Feet	DEPTH TO WATER AFTER MONITORING?	·· ; N/A
COMMENTS:	· · · · · · · · · · · · · · · · · · ·		·
LOGGED BY: MIC	CHAEL R. ERDMAN. P.E.	DATE:	13 AUG 2004

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TEST HOLE # 20

PERFORMED FOR	Western Spruce LLC			SITE PLAN	
LEGAL DESCRIPTION:	TP B22. Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)	_			
Depth (Feet)		s	SEE ATTACHI	ED TEST HOLE LOCA MAP	TION
1- ORGANI	CS/SILT				
[1]	GRAVEL (SP/GP) w/ Cobbles.				
6					
7 38					
9 8			····		
10 8	·	WAS GROU ENCOUNTE	IND WATER RED?	No	
13-		IF YES, AT 1 DEPTH?	WHAT	N/A	
14 8		DEPTH TO AFTER MOI	WATER	N/A	
16- Bottom of	of Hole 16 Feet				
COMMENTS.	· .		• •		
LOGGED BY: MI	CHAEL R ERDMAN, P.E.		DATE:	13 AUG 2004	

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TEST HOLE # 21

PERFORMED FOR:	Western Spruce LLC		SITE PLAN
LEGAL DESCRIPTION: Depth (Feet)	TP B22, Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)		EST HOLE LOCATION AP.
5. 80 7. 8. 8. 9.	CS/SILT GRAVEL (SP/GP) w/ Cobbles		
10- SS SAND (SI	P/GW)	WAS GROUND WATER ENCOUNTERED?	No
13-		IF YES, AT WHAT DEPTH?	N/A
14- Bottom of	Hole 14 Feet	DEPTH TO WATER AFTER MONITORING?	N/A
COMMENTS:			·
LOGGED BY: MIC	CHAEL R. ERDMAN, P.E.	DATE: 13	AUG 2004

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TEST HOLE # 23 ZZ ML2

			į		
PERFORMED FOR:	Western Spruce LLC				SITE PLAN
LEGAL DESCRIPTION					-
Depth (Feet)	(Proposed Fight Bake Subdi	VISION)		SEE ATTACHED	TEST HOLE LOCATION MAP.
I- ORGA	NICS/SILT				
2. Bo					
	& GRAVEL (SP/GP) w/ Cobbles & onal Boulders to 16".				
5.					
6 80					
8 0					
9. 80°					
10 8			WAS GENCOU	ROUND WATER NTERED?	No
12-			IF YES. DEPTH	AT WHAT	N/A
14.			•		
Botton	of Hole 15 Feet	-		TO WATER MONITORING?	N/A .
16-					
COMMENTS:					
_					
LOGGED BY.	MICHAEL R. ERDMAN, P.E.			DATE:	13 AUG 2004

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TEST HOLE # 22 Z3

PERFORMED FOR:	Western Spruce LLC	SITE PLAN
LEGAL DESCRIPTION Depth (Feet)	TP B22. Sec 20. T18N. R1E. S.M., Alaska (Proposed Hart Lake Subdivision)	SEE ATTACHED TEST HOLE LOCATION MAP.
ORGAN 2- 3- 4- 5- 6- 7- 8- 8- 9- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0- 0-	R GRAVEL (SP/GP) w/ Cobbles & nal Boulders to 12".	
10- SAND 8 Silt (GP	& GRAVEL w/ some -GM)	WAS GROUND WATER No ENCOUNTERED?
12- 13- 14- Bottom	of Hole 14 Feet	IF YES, AT WHAT N/A DEPTH? DEPTH TO WATER N/A AFTER MONITORING?
16- COMMENTS:		AFTER MONITORING?
LOGGED BY M	ICHAEL R. ERDMAN, P.E.	DATE: 13 AUG 2004

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TEST HOLE # 24

		<u> </u>
PERFORMED FOR	Western Spruce LLC	SITE PLAN
LEGAL DESCRIPTION	TP B22, Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)	
Depth (Feet)		SEE ATTACHED TEST HOLE LOCATION MAP.
I- ORGANIC	S/SILT	
2 80		
30		
Occasional	GRAVEL (SP/GP) w/ Cobbles & Boulders to 16"	
6. 0		
7-		
8 60		
° O		
10-		WAS GROUND WATER Yes ENCOUNTERED?
12- ぎ り	•	
13- Bottom of	Hole 12 Feet	IF YES, AT WHAT IT Feet DEPTH?
14-		DEPTH TO WATER N/A
15-	·	DEPTH TO WATER N/A AFTER MONITORING?
16-		
COMMENTS:		
		<u> </u>
LOGGED BY: MIC	HAEL R. ERDMAN, P.E.	DATE 13 AUG 2004

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TEST HOLE # 25

PERFORMED FOR:	Western Spruce LLC		SITE PLAN
LEGAL DESCRIPTION Depth (Feet)	TP B22, Sec 20, T18N, R1E, S.M., Alaska (Proposed Hart Lake Subdivision)	SEE ATTAC	HED TEST HOLE LOCATION MAP
777	GANICS/SILT		
, O Occa	AD & GRAVEL (SP/GP) w/ Cobbles & asional Boulders to 10". TE: Soil staining at approx. 5 feet,		
g 38	y GRAVEL (GM)		
186 /	tom of Hoie 10 Feet	WAS GROUND WATER	R Yes
13-		IF YES, AT WHAT DEPTH?	8.5 Feet
15-		DEPTH TO WATER AFTER MONITORING?	N/A
COMMENTS		·	
LOGGED 8Y	MICHAEL R. ERDMAN, P.E.	DATE	13 AUG 2004